

PLANNING COMMISSION MEETING MINUTES

Vancouver City Hall – Council Chambers – 415 W. Sixth Street
PO Box 1995 – Vancouver, Washington 98668-1995
www.cityofvancouver.us

Marjorie Ledell • Steve Schulte • Larry Blaufus • Zachary Pyle
Nena Cavel • Patrick Adigweme • Melissa von Borstel

October 24, 2023

REGULAR MEETING

Vancouver City Hall - 415 W. Sixth Street, Vancouver WA

CALL TO ORDER

The October 24, 2023, meeting of the Planning Commission was called to order at 6:30 p.m. by Chair Ledell.

ROLL CALL

Present: Marjorie Ledell, Zachary Pyle, Patrick Adigweme, Larry Blaufus (virtual, joined at 6:35 pm), Nena Cavel, Steve Schulte, and Melissa von Borstel (joined at 6:40 pm)

ADOPTION OF MINUTES

Motion by Commissioner Schulte, second by Commissioner Adigweme, and carried unanimously to adopt the September 26, 2023, minutes.

COMMUNITY FORUM

Don Steinke was present to speak regarding the annual review of the Comprehensive Plan as well as the proposed warehouse code changes. He suggested adding stipulations to the recommendations to meet the City's stated climate goals. New construction should be all-electric ready, solar ready, and EV ready.

PUBLIC HEARINGS

2023 ANNUAL REVIEW COMPREHENSIVE PLAN AND ZONING CODE MAP AND TEXT CHANGES

Bryan Snodgrass, Principal Planner, Community Development Department

Bryan Snodgrass presented the proposed Comprehensive Plan and Zone change located at the intersection of SE 192nd Avenue and SE 15th Street, zoning in the region, the conceptual site plan, and an analysis of the proposal.

Commission Questions

- Status of recent State laws related to housing. Staff responded the State laws mentioned in the presentation have all passed into law. Staff are anticipating further clarification and rulemaking from the state Department of Commerce on HB1110, which requires impacted cities to allow for 4 or 6 units on all single family lots.
- Status and details of the development agreement between the developer and the City. Staff responded some aspects of the development agreement have been worked out. The City is working on the language to implement the interim green building policy. The conceptual site plan

will be used as the template for development during the site plan review. The agreement will also include the buffer, building heights, and pledge for affordable units.

The applicant, represented by Jessica Herseg of Dowl, presented on the proposals consistency with the Revised Code of Washington, Washington Administrative Code, state legislation and the City's policies for housing and climate, and the Vancouver Comprehensive Plan and Strategic Plan.

Public Testimony

Alicia Barron opposed the proposed rezone on 192nd Avenue, citing issues with housing affordability, and suggested other methods to reduce the cost of housing.

Kevin Barron was opposed to the proposed rezone on 192nd Avenue due to incompatibility of the proposal with the surrounding neighborhood. He also expressed concerns with the ability of existing infrastructure to support the new development.

Mary Tsang was opposed to the proposed rezone on 192nd Avenue due to the increase in traffic on SE 15th Street and impacts to the adjacent neighborhoods.

Jacob Billingsly was opposed to the proposed rezone on 192nd Avenue and proposed an alternative for development of the lot with single family houses and smaller multi-unit plexes.

Leah Perkel was opposed to the proposed rezone on 192nd Avenue due to the addition of apartments in the neighborhood.

David Rehmann was opposed to the proposed rezone on 192nd Avenue due to existing issues with cut-through traffic in the neighborhood, and concerns that this would get worse if the rezone is approved.

Layne Berg was opposed to the proposed rezone on 192nd Avenue due to increased traffic on SE 15th Street, an insufficient amount of affordable housing included in the proposal, and incompatibility of the R-22 zone with adjacent neighborhoods.

Norman Newkirk expressed concern for pedestrian safety in the area of the proposed rezone. He walks on SE 15th Street, but no longer walks on SE 192nd Avenue because it is not safe. He questioned whether pedestrian safety would get worse with the addition of higher density housing in the area.

Commission Questions

- Impacts to traffic from the proposed development. Staff responded there would be an incremental increase in traffic from the project but noted that it would also provide sidewalk infill on the north side of SE 15th Street as part of required frontage improvements. Eric Hahn, Senior Civil Engineer, Public Works, responded there is adequate capacity on both streets based on the proposed rezone. There is an existing need to extend the eastbound turn lane at 15th and 192nd. There is concern for speed and pedestrian safety on 15th Street, but it is unrelated to the proposed rezone.
- Compatibility of the proposed rezone and the surrounding neighborhood. Staff responded there are policies in the Comprehensive Plan related to compatibility. There would be an incremental change to traffic volumes and the visual appearance would change with the development of apartments on the site. The proposal includes enhanced buffering around the site, two story buildings next to the existing homes, and retaining street trees on 15th and 192nd.

The applicant, represented by Kristine Connolly of Kittelson & Associates, presented on the traffic study for the site, showing an increase in trips due to the rezone, the capacity for 15th Street, and crash analysis.

Commission Questions

- Scope of the capacity analysis in the traffic study. The applicant responded the traffic study analyzed 15th Street from 164th to 192nd, as well as 192nd to Mill Plain and 20th Street.
- Non-vehicular mobility and trips. Staff responded the City doesn't currently require or measure non-vehicular trips through the development review process, though this will change when the updated Transportation System Plan is adopted and implemented.
- Distribution trend of crash data during the last 10-year period. The applicant did not have that information available. The pedestrian and bicycle crashes occurred prior to the installation of the bike lanes on 15th Street.
- Project impacts on cut-through traffic. Staff responded it is a concern and will work with traffic operations to review the cut-through patterns regardless of the type of development. There would be an incremental increase in vehicle volumes associated with the rezone and proposed development, but nothing the system cannot accommodate. Staff encouraged the neighborhood to continue to work with City staff to address the issue through other programs and projects.

Gary Vance, Vance Developments, was present to respond to public testimony and Commission questions. Traffic and safety on 15th Street are a concern and the developer is supportive of filling the existing sidewalk gaps. The developer has conducted neighborhood outreach starting in May 2023. The site plan was amended from the proposed R-30 zoning to R-22 to address neighbor concerns and improve perceived compatibility with surrounding neighborhoods.

Commission Questions

- How long will rent caps be in place for the 5% of units with rents restricted to 80% of Area Median Income (AMI)? Staff responded that is being negotiated and will be finalized as part of the development agreement, but the current agreement is for 25-30 years.
- Incorporating the public testimony as part of the development agreement. The applicant responded community engagement will continue with this project and plan to work with the community as the project proceeds.
- City's support for homeownership. Staff responded the City prioritizes homeownership through lobbying the state legislature for ongoing condominium reforms to allow for multifamily homeownership and works with non-profits and affordable housing developers to support homeownership through land banking and other mechanisms.

Deliberation

Vice Chair Pyle noted that the concerns and details of the site will be worked through at the site plan review stage of this development, including analysis of infrastructure, transportation, sewer, etc. Given the housing need and proximity to infrastructure on 192nd, he was supportive of the staff recommendation that this is a suitable site for multifamily housing. He was supportive of including all discussion points related to the forthcoming the Development Agreement in the Planning Commission's recommendation to Council.

Commissioner Schulte agreed with some of the concerns raised but was ultimately supportive of the staff recommendation as it will address the broader housing needs of the community.

Commissioner Adigweme agreed the concerns raised should be incorporated in the Development Agreement. The housing crisis requires increasing housing production, and this proposal brings a diversity of housing options to the area.

Commissioner von Borstel agreed with concerns for safety and also acknowledged this proposal can help address the housing crisis in the community. She was also in favor of including the items discussed as part of the Development Agreement.

Commissioner Cavel was supportive of increasing the housing supply to address the housing crisis and supported the staff recommendation.

Chair Ledell indicated her support for the staff recommendation based on the established review criteria, and encouraged City staff and leadership to be proactive in addressing traffic issues as it adds more developments, including the safety concerns community members identified on 15th Street.

Commissioner Blaufus appreciated the developer outreach with the public for this project. Based on the criteria, and with the adjustments to the proposal from the developer, he was in favor of the staff recommendation.

Motion by Vice Chair Pyle, seconded by Commissioner Cavel, based on the October 24, 2023 public hearing discussion, staff reporting findings, and development agreement points made during this meeting, the Planning Commission recommends to City Council approval of the 192nd Avenue Comprehensive Plan zoning map designation change as described, from urban low density R-6 to urban high density R-22.

Roll Call Vote

Commissioner von Borstel	Yes
Commissioner Adigweme	Yes
Commissioner Cavel	Yes
Commissioner Blaufus	Yes
Commissioner Schulte	Yes
Vice Chair Pyle	Yes
Chair Ledell	Yes

Motion carried unanimously.

The proposed Wood Duck Springs Comprehensive Plan and zoning map change was postponed to a future meeting due to incomplete materials supporting a recent change to the proposal.

Motion by Commissioner Schulte, seconded by Commissioner Cavel, and carried unanimously to adjourn that portion of the 2023 Annual Review Comprehensive Plan and Zoning Code Map and Text Change Public Hearing relating to the Wood Duck Springs proposed Comp Plan and Zoning Map changes and continue the matter to a subsequent public hearing at the Planning Commission meeting on November 14, 2023.

In accordance with Sections 42.30.100 and 42.30.090 of the Revised Code of Washington, that portion of the City of Vancouver's Planning Commission 2023 Annual Review Comprehensive Plan and Zoning Code Map and Text Change Public Hearing relating to the proposed Wood Duck Springs Urban Low/R-9 to Urban High/R-22 and Commercial/General Commercial Comprehensive Plan and Zoning Map Changes was adjourned and will continue at a subsequent public hearing at the Planning Commission meeting on

Tuesday, November 14, 2023 at 6:30pm in the Vancouver City Council Chambers located at 415 W. 6th Street, Vancouver, WA.

Bryan Snodgrass presented the proposed Comprehensive Plan and Zone change located at the intersection of 63rd Street and 72nd Avenue (Miller), zoning in the region, the conceptual layout, and an analysis of the proposal.

The applicant, represented by Jayson Taylor of PLS Engineering, presented an overview of the proposal, the applicant's work with a biologist to understand the wetland area on the site, positioning of the apartment buildings on the site, the applicants work to include the corner parcels as part of the development, and consistency with the approval criteria.

Public Testimony

Alison Kannisto was concerned for development on this site as it floods annually, which she attributed to dense development in the floodplain. She expressed concerns for the surrounding homes and the ability to obtain flood insurance for those who currently live in the area if the rezone moves forward, and development is constructed on the site.

Jeff Prussack testified regarding the reasoning for the proposed R-30 zoning district and the number and size of the units, as the developer's original request was for R-22 and City staffs suggested for R-30 to add more units to address the housing crisis and statewide housing legislation.

Ellena Buck opposed the proposal due to the increase in parked cars and vehicle traffic at the intersection and expressed concern for impacts to the school district.

David Larson was opposed to the proposed rezone to R-30 and articulated his feeling that R-18 or R-22 would be more appropriate. He is also worried about an increase in street parking in the surrounding neighborhood resulting from the development.

Derek Lindeman was concerned for development on the site due to flooding and would like to see biological and environmental studies of the area. He was also concerned for the safety of students crossing 63rd Street to access the elementary school.

Commission Questions

- The floodplain and wetlands issues. Staff responded the site has wetlands value, and a more detailed study will be done at the site plan review stage. There aren't any wildlife parameters visible. Staff expect much of the site will not be developable and therefore suggested allowing for a higher yield on the developable parts of the site to address area housing needs.
- Reasoning by staff for R-30. Staff responded the applicant originally proposed R-22 but given the developable land area and if they are able to acquire the corner properties, R-30 may be more appropriate to address housing needs.

The applicant responded to the public testimony and acknowledged the wetland area. In the site plan review process, the applicant intends to show there will be no net loss in habitat function through wetland mitigation banking or other onsite mitigation. The floodplain is also an issue to work through, and the applicant will work with a floodplain consultant and FEMA to ascertain the floodplain elevation and show no net loss of flood storage, which may affect the developable area on the site. The applicant noted they may not be able to utilize the full allowed density of R-30 given the conditions of the site.

Commission Questions

- Benefits of the R-30 designation, including more flexibility in development due to site mitigation, space for flood storage and profitability. The applicant agreed with that statement.
- Applicant's plan to incorporate feedback into the proposed development. The applicant responded it's unlikely the site is developed to the full density allowed under R-30, and will likely be closer to the density allowed in R-22 with units similar to those across the street. Assuming the rezone is approved, there are further opportunities for the City and public to weigh in during the site plan review stage. The applicant will address the flooding concerns and ensure there is no net loss of habitat function or flood storage.
- Status of the western parcels. The applicant responded the owners of the smaller corner parcels are in contact with the developer. There is not currently a contract to purchase the smaller of the two parcels. The larger corner parcel previously owned the large parcel, so it's possible they will also sell that parcel to the developer. Like the development to the south, the developer would like to develop the full lot including the corner if they are able to acquire the properties.
- Has the developer conducted any critical areas research or studies? The applicant responded they have consulted with a biologist who conducted a basic rating of the wetland. The wetland as shown on Clark County's GIS is fairly accurate.
- In other applications, the Commission has considered critical areas in determining whether or not to make a recommendation for approval. How is this application different? Staff responded the Commission recently considered an application for rezone of Burnt Bridge Creek West. That site was much larger, and included Oregon white oak woodlands, which is more unique and as a critical area habitat holds significant value both for the trees and the habitat it provides. In this application, there is wetland with less evidence of habitat value.

Deliberation

Commissioner Blaufus indicated the application may not be ready for consideration due to the status of the smaller corner parcels. Given the flooding status of the site and the applicant's initial request for R-22, he was in favor of a recommendation for R-22 rather than R-30.

Commissioner Cavel was in support of the recommendation. City staff will work with the developer to address the flooding and wetland issues. She was in favor of recommending R-30, as it provides more flexibility to the developer even if it is not utilized to the full extent.

Commissioner von Borstel agreed with Commissioner Blaufus and was supportive of a recommendation for rezone at R-18 rather than R-30.

Commissioner Adigweme agreed with both Commissioners Blaufus and Cavel. The option for higher density on the site doesn't necessarily mean that will occur. There will be further review in the process to address the critical areas. He was in favor of supporting the staff recommendation.

Commissioner Schulte supported the staff recommendation. The applicant appears to understand the property and its challenges and will size the development appropriately.

Vice Chair Pyle supported the staff recommendation, considering the surrounding area and existing infrastructure and neighboring commercial amenities. He also agreed with Commissioner Blaufus' assessment that the application seems somewhat incomplete.

Chair Ledell agreed with Commissioners Blaufus and Pyle and supported the staff recommendation.

Motion by Commissioner Cavel and seconded by Commissioner Schulte based on the October 24, 2023 public hearing discussion and staff report findings, the Planning Commission recommends that the City Council approve the Miller Comprehensive Plan and zoning map designation change as described from Urban Low Density/R-9 to Urban High Density/R-30.

Roll Call Vote

Commissioner von Borstel	No
Commissioner Adigweme	Yes
Commissioner Cavel	Yes
Commissioner Blaufus	No
Commissioner Schulte	Yes
Vice Chair Pyle	Yes
Chair Ledell	Yes

Motion carried 5-2.

Bryan Snodgrass presented the proposed Comprehensive Plan and Zone change located on E 18th Street (Datepark), zoning in the region, the conceptual site plan, and an analysis of the proposal.

The applicant, represented by Danielle Lewis, presented an overview of the proposal, planned development of the site, rehoming existing tenants, housing needs in the community, and community partners.

Public Testimony

No members of the public were present to provide testimony.

Commission Questions

- Benefits to reduce the parking ratio. The applicant responded it would be beneficial to require less parking and would allow for more green space. Staff also responded there are provisions in the code to reduce parking for affordable housing that will be considered during site plan review.
- Makeup of unit sizes in the existing structures. The applicant responded currently there are 12 two-bedroom townhomes, one studio, and two single family residences.
- Will there be units available between 50% and 80% AMI? The applicant responded the goal is to have more units close to 50% AMI, and they are currently applying for grants to lower the cost of more units.
- Differences between permanently supportive housing and very low-income housing. Staff responded the Datepark proposal is in the range of 50% to 80% AMI, as compared with very low income housing in the range of 0% to 30% AMI that often includes permanent supportive services.
- The City's AMI requirements for the City to co-sponsor an application. Staff responded the City requires at least 40% of the units to be affordable to people earning 60% AMI or below.

Motion by Commissioner Cavel and seconded by Vice Chair Pyle based on the October 24, 2023 public hearing discussion and staff report findings, the Planning Commission recommends that the City Council approve the Datepark zoning map designation change as described from Urban High Density/R-18 to Urban High Density/R-30.

Roll Call Vote

Commissioner von Borstel	Yes
Commissioner Adigweme	Yes

Commissioner Cavel	Yes
Commissioner Blaufus	Yes
Commissioner Schulte	Yes
Vice Chair Pyle	Yes
Chair Ledell	Yes

Motion carried unanimously.

Bryan Snodgrass presented the summarized proposed text changes, including a Comprehensive Plan text change in the Capital Facilities Plan (CFP), an update related to parks in the Comprehensive Plan, and twelve text changes in the zoning code, which is [Title 20](#) of the Vancouver Municipal Code.

Public Testimony

No members of the public were present to provide testimony. The City previously received comments from the Fircrest Neighborhood Association opposing the increased SEPA exemption threshold.

Commission Questions

- Regarding the changes to SEPA requirements, the difference between mid and large apartments. Staff responded for apartments, the existing exemption threshold is 20 units, and the proposed exemption threshold is 200 units, following state enabling legislation allowing for this change. For small single-family developments (lots smaller than 1500 square feet), it's a much smaller range (details in the staff report). Most apartment proposals in the City are smaller than 200 units, which means if the change is adopted most new multifamily developments would not be subject to SEPA review unless there are critical lands present. All development proposals are still subject to City standards regarding critical lands, archeology, etc.

Motion by Commissioner Cavel and seconded by Vice Chair Pyle based on the October 24, 2023 public hearing discussion and staff report findings, the Planning Commission recommends that the City Council approve the Comprehensive Plan and zoning map designation change as described.

Roll Call Vote

Commissioner von Borstel	Yes
Commissioner Adigweme	Yes
Commissioner Cavel	Yes
Commissioner Blaufus	Yes
Commissioner Schulte	Yes
Vice Chair Pyle	Yes
Chair Ledell	Yes

Motion carried unanimously.

WAREHOUSE CODE CHANGES

Chad Eiken, Director, Community Development Department

Chad Eiken presented the proposed amendments to VMC Title 20, including making warehouses greater than or equal to 250,000 square feet a limited use in Heavy Industrial (IH) District, reducing parking space requirements, decreasing maximum lot coverage, adding limited use/development standards for large warehouses, and adding climate action measures for large warehouses. Community outreach and

engagement included online information and meetings with interested stakeholders. The City issued a SEPA determination and has not receive any additional comments through that process. Council provided feedback during the October workshop and that feedback has been incorporated.

Public Testimony

Heidi Cody, representing Alliance for Community Engagement, expressed concern that the warehouse code changes are a missed opportunity to meaningfully reduce greenhouse gas emissions in keeping with the ambitious Climate Action Framework goals. The threshold of 250,000 square feet for considering warehouse code changes has had a determinative effect for all warehouses under that threshold. We find it problematic that a 249,999 square foot warehouse or smaller simply has no climate expectations to meet, considering that the City has a city-wide carbon-neutrality goal by 2040. We understand the Green Building/Policies Standards don't yet exist. But delaying climate measures for all warehouses under 250,000 sq. ft. until the Green Buildings Standards are established creates a policy gap that misses a decisive moment to curb greenhouse gas emissions. ACE suggests that the Planning Commission recommend that new buildings should NOT generate greenhouse gas emissions. ACE also recommends that the Planning Commission revise the warehouse size threshold and apply it to *groups of buildings that exceed 250,000 sq. ft. in a single development application*. Otherwise warehouse developers are likely to use this loophole to avoid climate measures the City should implement.

Michael Chen, representing Mackenzie Architecture, provided comments on the proposed changes. The architectural elements and design standards for industrial buildings are vague and will lead to confusion for developers and staff. The 60 foot high landscape buffer will have adverse impacts to the goal of highlighting the architectural elements of the buildings. Regarding the climate elements, they should be included as amendments to the IBC rather than in the zoning code.

Monica Zazueta advocated for meeting the needs of all people within the means of the planet, with a focus on balancing these needs. The proposal is a missed opportunity to meet the needs of all of the community.

Eric Olmstead spoke regarding safety concerns with truck traffic accessing warehouses on 162nd Avenue through residential areas. He requested adding requirements for freight access from warehouses to highways.

Staff responded to public testimony, agreeing that smaller warehouses are not impacted by the climate measures in the proposal. It is possible to have multiple buildings on a site that exceed 250,000 square feet and not trigger the requirements. The Port and business community are in favor of the single building policy as it is currently proposed. The architectural elements were left intentionally vague to allow for some flexibility in design. Regarding the concern for warehouses located adjacent to residential properties, this issue was one reason for the moratorium and, going forward, large warehouses would not be allowed in Light Industrial zones, which are typically located in closer proximity to housing and commercial services (than Heavy Industrial districts).

Commission Questions

- Impact of the Green Building Standards legislation. Staff responded these proposed standards won't apply to smaller warehouses, but the City is working to develop a green building policy that will likely apply to all new buildings in the City.
- Has staff considered a standard for contiguous properties with multiple smaller warehouses that would be subject to these standards?

- When the green building policy is adopted, is it likely these larger warehouse standards will be modified? Staff responded that there could be new or different green building standards that affect warehouses, but the proposed climate action development standards have a high likelihood of being included in the forthcoming green building standards.
- Freight traffic on Fruit Valley Road. Staff responded to the Port's suggestion that the ordinance not include the name of a specific road, but instead call out all "non-truck routes." Staff confirmed Fruit Valley Road is a designated freight route, and it is not the intent to prohibit all truck traffic on Fruit Valley Road, just truck traffic from any new warehouse larger than 250,000 square feet. Staff also stated that truck traffic is not the only impact that is intended to be mitigated by the proposed standards. A longer term plan could include a bypass to the west, and safety improvements to Fruit Valley Road.
- Timeline for the green building standards? Staff responded it will take about 18 months and will be reviewed and approved through the Building and Fire Commission and City Council.
- Will the new green building policies be more stringent than these interim standards for warehouses? Staff responded they will likely be more detailed and stringent. The current proposed standards for warehouses are intended to require certain features that make it easier for warehouses to adapt to green building technology and infrastructure.

Motion by Commissioner Cavel, seconded by Vice Chair Pyle, based on the October 24, 2023 public hearing discussion, the Planning Commission recommends that the City Council approve the warehouse code changes as described in the staff report and Exhibit B.

Roll Call Vote

Commissioner von Borstel	Yes
Commissioner Adigweme	Yes
Commissioner Cavel	Yes
Commissioner Blaufus	Yes
Commissioner Schulte	Yes
Vice Chair Pyle	Yes
Chair Ledell	Yes

The motion carried unanimously.

COMMUNICATIONS FROM CHAIR AND STAFF

There were no communication items from the Chair or staff.

ADJOURNMENT 11:02 P.M.

Marjorie Ledell, Chair

To request other formats, contact Julie Nischik, Community Development Department | 360-487-7813. WA Relay: 711 | julie.nischik@cityofvancouver.us

OUR VANCOUVER

OUR FUTURE 2045

Phase I Work Session

Tuesday, November 14, 2023

Rebecca Kennedy (she/her)

Deputy Director
Community Development Department
Rebecca.kennedy@cityofvancouver.us

Domenique Martinelli (she/her)

Senior Long Range Planner
Community Development Department
Domenique.Martinelli@cityofvancouver.us

Overview

Purpose: Planning Commission review and feedback of frameworks from Phase I of the Comprehensive Plan Update



Project Phases

- Phase 1: Visioning

- Project awareness, establishing presence, input for individual vision statements for each Comprehensive Plan element
- Equity Framework, Community Partnership, Goals Framework

You are
here!



- Phase 2: Land Use Scenarios

- Interactive workshops and surveys to gain feedback on land use scenarios

- Phase 3: Policy Development / Implementation

- Reporting back and demonstrating how input was incorporated into outcomes, relationship building for long term implementation

Phase I Inputs

- Community Visioning Process (2022-23)
- Phase I Engagement: OUR VANCOUVER
 - ➔ Focus on project awareness, visioning questions
- Community partner discussions
- Existing Conditions Work (Community Atlas)
- Existing Policy –
 - ➔ Climate action Framework, Strategic Plan, Parks Plan, Transportation System Plan



Input: Community Visioning Process

- Engaged more than 2,215 community members since June 2022, across 33 events and community conversations
- Analyzed all community feedback shared with the City from 2021 to present
- Our goal: Align current and upcoming planning efforts around a shared 20-year vision for Vancouver



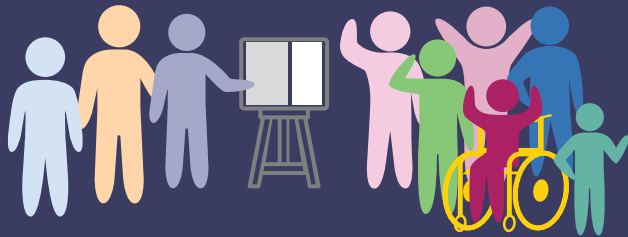


Equity Framework

Equity Framework Draft Objectives

- Set forth the City of Vancouver's definition of equity and key principles by which Comprehensive Plan goals, objectives and policies can be reviewed for equity.
- Identify planning priorities according to data analysis and inclusive community engagement.
- Guide the selection of goals, policies and capital investments.
- Articulate how equity is integrated in the process of updating the Comprehensive Plan and the Comprehensive Plan product itself.

Equity Definitions



Equity is a state or system of fairness or justice that recognizes and balances different challenges, opportunities, and needs across groups of individuals.

Process Equity is ensuring the overall process is designed in an **equitable** manner that prioritizes fair treatment and meaningful involvement from **Priority Communities**.

Outcome Equity is ensuring individuals from different demographic and socioeconomic backgrounds have **equitable** opportunity to reach their full potential. Equitable outcomes are both **measurable** and the result of equitable **processes**.

Priority Communities identify historically marginalized and/or most vulnerable communities that should be centered in our processes.

Priority Communities

- BIPOC community
- People with low incomes
- People with disabilities, including neurodivergent
- Youth and children
- LGBTQ+ individuals
- Renters
- People without an address/ people experiencing homelessness
- Small business owners
- Refugees
- Undocumented population

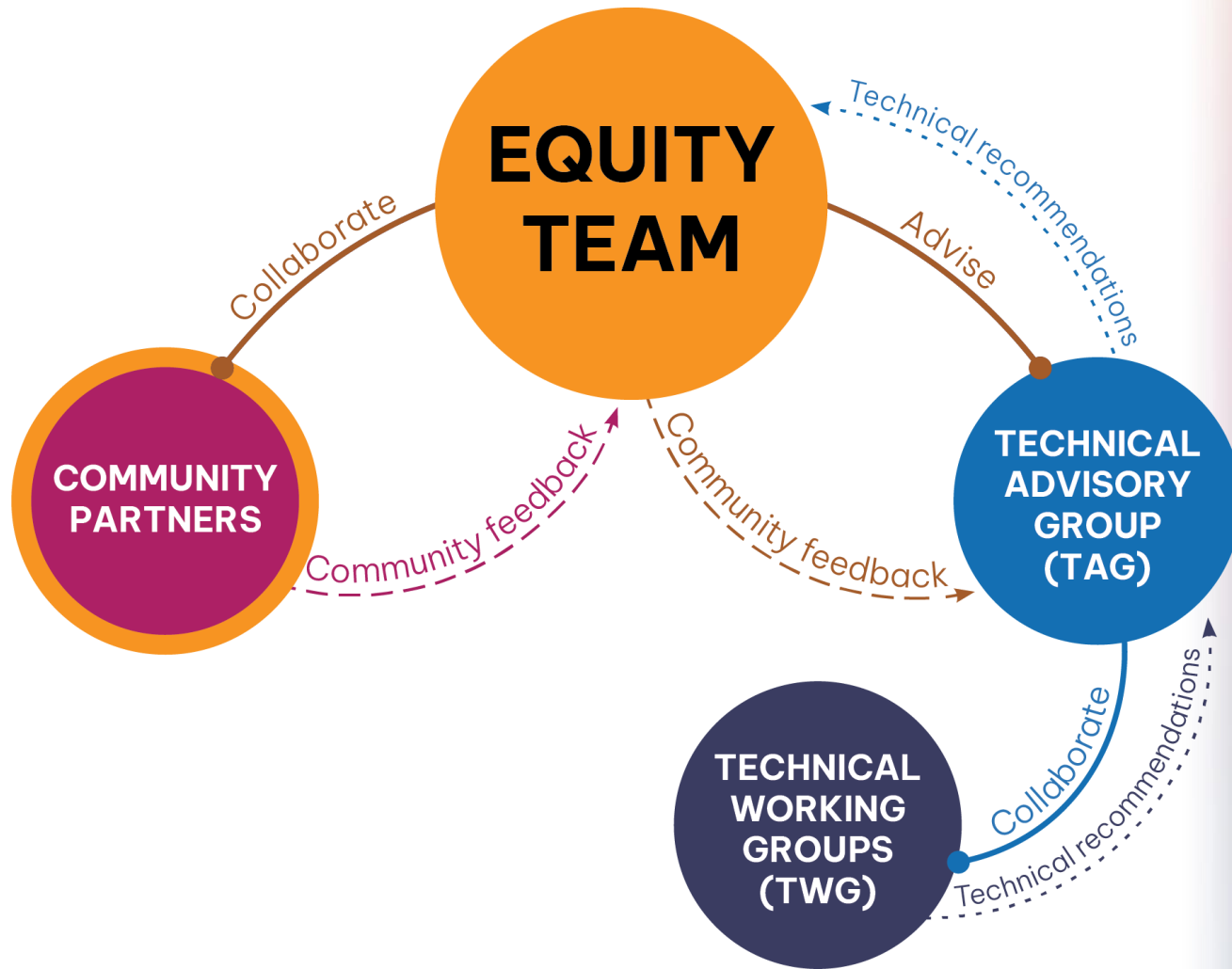
Framework Approach



Equity Team & Community Partners

Community Partners will be members of the Equity Team

Equity Team conversations will ensure Community Partners are connected to the technical work, and vice versa in a co-creative model for policy development



Community Partner Cohort

Community-Based Organizations

- Queer Youth Resource Center
- Family-Community Resource Coordinator, Fruit Valley Elementary
- Latino Leadership Northwest
- Southwest Washington Equity Council (SWECC)
- Council for the Homeless
- Pasitos Gigantes
- Sakura 39ers
- PICA-WA
- Odyssey World International Education Services

Liaisons with community focuses in

- Slavic, Russian, Ukrainian communities
- Vietnamese, Chinese
- Pacific Islander communities
- Seniors
- Youth
- Spanish speaking communities;
- Housing Insecurity

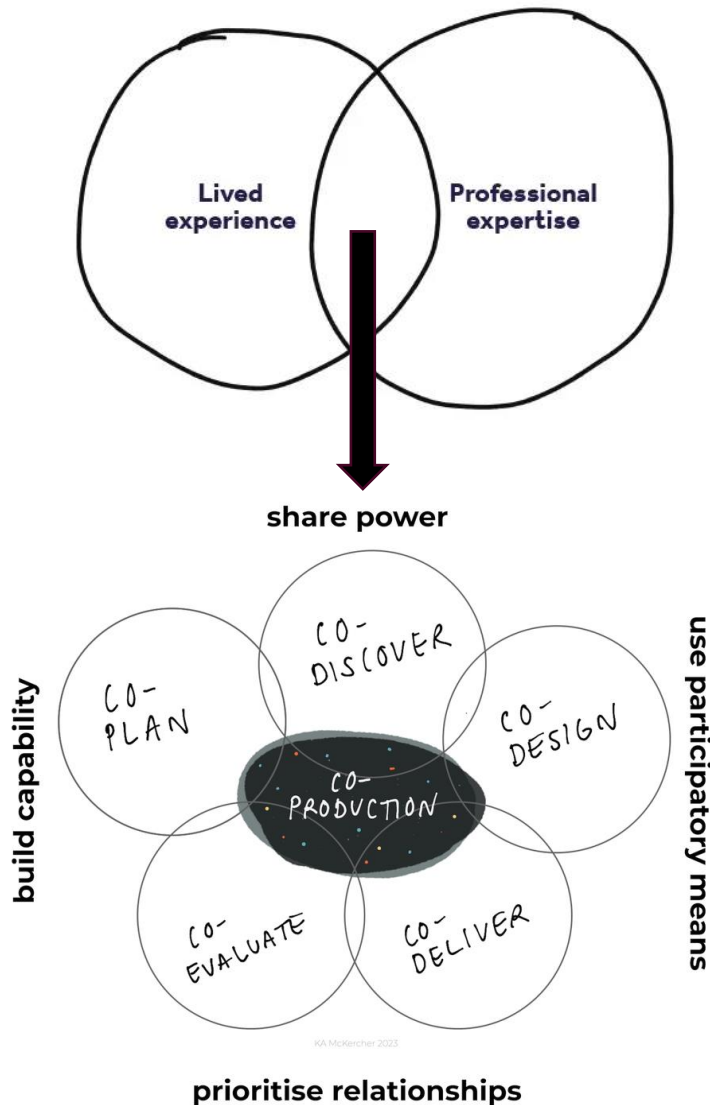
City Boards & Commission Representation

- Planning Commission
- Transportation and Mobility Commission



Community Partnership Framework

Co-Design



Intent of our process

- Moving away from top-down decision making: the City *and* the community collectively design policy, instead of the City asking for input in an advisory capacity.
- Challenging and changing inequitable power structures and ensure equitable outcomes are delivered through an equitable process.

Co-Design is circular, not linear

- Establish shared understanding, get familiar with the context
- Get comfortable being in the grey
- Explore choices individually and collectively
- Make choices together
- Iterate, change course, and refine as necessary.

Key Objectives

Demonstrate how

- Information is shared
- The community will be engaged, and when
- The voices of equity priority communities and people who may not typically participate in the planning process will be prioritized and elevated

Account for

- Potential power dynamics within all methods of obtaining, receiving, and incorporating community input.
- The varying types of input that will be received and demonstrate accountability for meaningful incorporation into tangible outcomes.

Set expectations

- About the influence community member's feedback will have on the process at varying times
- About the level of change expected with this plan and how it will affect people today and in the future.
- The level of involvement: *Inform, Consult, Involve, Collaborate, Empower*

Incorporate

- Feedback, input, and insights received from vast amount of community input already been received from other recent engagement efforts in the City.

Public Involvement Goals

- **Establish a co-creative process between the City and the Vancouver community that shifts power dynamics and elevates the voices of equity-priority communities.**
- **Build trust through transparent two-way communication channels that humanize the project, advance community knowledge, create community ownership, and build long-lasting relationships.**
- **Emphasize Vancouver pride to highlight future benefits at a personal, community, and city level to encourage participation throughout the process.**
- **Establish comprehensive plan policies that are reflective of community and agency input and will advance the implementation of the plan.**

Overall Engagement – Key Audiences

- BIPOC communities
- Childcare Partners
- Culturally Specific Organizations
- Neighborhood Organizations
- Building and Development Community
- City Advisory Boards and Commissions
- City Staff
- Community Development Organizations
- Economic Development Community
- Education Providers
- Environmental Community
- Faith Based Community
- Food Security / Food Banks
- Healthcare, Behavioral health, addiction service providers
- Historic Preservation
- Housing Agencies
- Immigrants and refugees
- LGBTQ+ Communities
- Older adults
- People living with disabilities
- People living without permanent housing
- People with low income or who are cost burdened
- Partner agencies and utility providers
- Veterans
- Youth



Goals Framework

1 plan vision

“Vancouver is an equitable and prosperous community, which ensures that all residents, businesses and organizations benefit from the growth and advancement we make together. Vancouver will be recognized for our quality of life, as evidenced by affordable housing in vibrant, safe and walkable neighborhoods, access to jobs and economic opportunity for all, and resilience to the impacts of climate change.”

2 goals

Describe desired results toward which planning efforts should be directed. Are broad in nature.



3 policy

Describe more specific actions or initiatives to advance the broader goals.

4 implementation

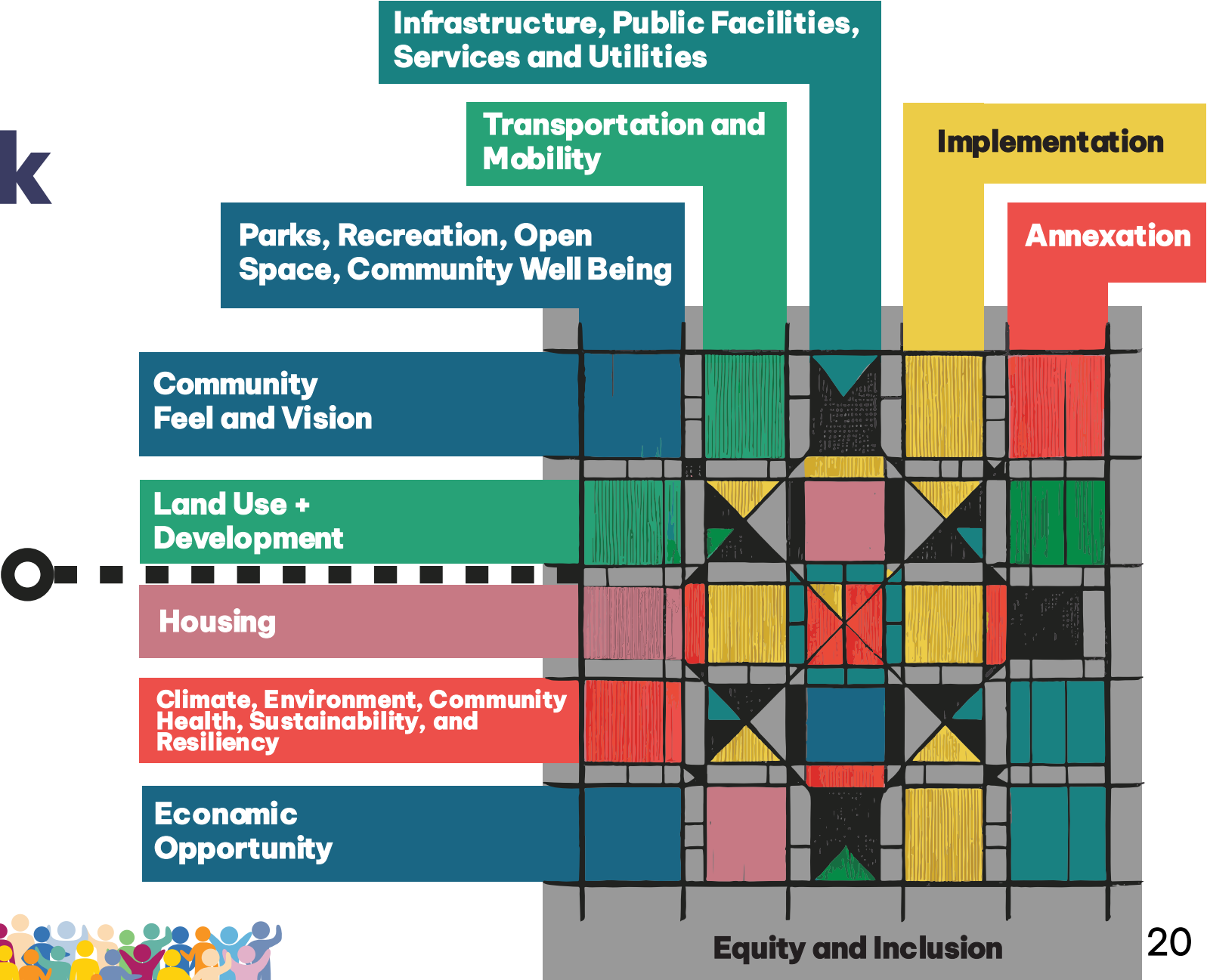
Outlines the actions and timeframe for advancing policies over the 20 year planning period – short, medium, long term.

Goals Framework

Plan Vision

Is translated into....

Think of it as an outline for the plan, or *Chapters* in a book!



Draft Goals Framework

Introduction – City’s Core Values + Focus Areas

Community Feel and Vision – Inclusive + Affordable + Safe + Vibrant + Accessible + Prosperous + Livable

Land Use and Development – 15-minute neighborhoods + access to jobs & essential spaces + healthy + connected + resilient + harmony between built and natural environment

Housing – Affordable + Accessible + Choice + Diversity in sizes and types + Universal Design + Culturally Appropriate + Neighborhood Cohesion + reduce houselessness + Homeownership and opportunities for wealth creation

Equity and Inclusion – Inclusive + Reparative + Promote health and wellness + Universal Access to Resources + Nurturing and Valuing All People

Climate, Environment, Community Health, Sustainability, and Resiliency – Equitable and Just Transition + Increase Tree Canopy + Decrease Emissions + Community Preparedness + Community Stewardship and Resilience + Holistic Cycles of Consumption and Production + Access to Healthy Food + Built Environment Promotes Health

Draft Goals Framework

Economic Opportunity – Support Business and Industry + Job Growth + Facilitate Startups and Innovation + Resilient Green Economy + Equitable Access + Wealth Creation + Access to Childcare
Parks, Recreation, Open Space, and Community Well Being – Increase access + More Trails and Green Spaces + Inclusive and Safe Public Spaces + Climate Adaptation + Native Plants and Species + Increase Health Opportunities Through Recreation + Diversity in Amenities + Youth Programming
Transportation and Mobility – Reliable + Frequent + Safe + Accessible + Equitable + Multi-Modal + Climate Friendly + Enhanced Transit + Regional Connectivity
Infrastructure, Public Facilities and Services and Utilities – Utilize Existing Infrastructure + Expand Services and Programs + Equity Lens + Community Safety + Green Infrastructure
Annexation – Sustainable Growth + Maintain Levels of Service
Implementation – Actionable Policies + Alignment with Strategic Plan + Local and Regional Coordination + Accountability

Phase I



Final frameworks will be integrated into three land use alternatives.



Phase II



Next Steps

- Community Wide Survey
- Small Group Conversations
 - ➔ Neighborhood Associations, Community Based Organizations, Nonprofits, economic development / location business organizations, and other stakeholders.
- Community Partners
 - ➔ Existing Conditions
 - ➔ Refinement of Draft Goals
 - ➔ Incorporating goals into draft land use frameworks
- Resolution endorsing three frameworks (equity, partnership, goals)

Land Use Frameworks

- Joint Planning Commission / City Council WS on Land Use Frameworks
- Multiple work sessions in early 2024 on Land use Frameworks.
- Preferred alternative by May 2024

Discussion

- **Do you feel that the goals framework reflects the values that we are aiming to achieve as a community?**
- **Are there any core themes that you would like to make sure are added or emphasized as part of the three frameworks?**
- **Do these frameworks account for creative and unique methods to reach underserved populations?**

DATE: November 14, 2023

TO: Chair Ledell and Planning Commission members

FROM: Rebecca Kennedy, Deputy Director; Dominique Martinelli, Senior Long-Range Planner, Community Development Department

RE: **Phase I Update – Our Vancouver**

Intent

Provide Planning Commission with a high-level overview of the work that's been completed during the initial phase of the Comprehensive Plan Update. This includes draft Equity, Community Partnership, and Goals Frameworks, and reviewing community visioning work and project engagement that informed the development of these guiding documents.

Background

The City of Vancouver's Comprehensive Plan provides the overall long-term vision and policy direction to manage the built and natural environment in Vancouver and provide necessary public facilities to achieve that vision. The City adopted its first comprehensive plan under Washington's Growth Management Act in 1994 (Chapter 36.70A RCW), with a major re-write occurring in 2004, and a less substantive update occurring most recently in 2011. On February 27, City Council endorsed a chartering framework for the Comprehensive Plan process, which included a framework for goals within the overall plan – to ensure policies, regulations, and implementation methods are rooted in an articulated purpose.

Purpose of Plan Frameworks

On February 27, City Council endorsed a project charter for the Comprehensive Plan process. A project charter is implemented for projects that are long-term in nature and in which decisions are iterative and at each phase build off those made in the previous one. This included three initial frameworks to be finalized during the initial phase of the project:

- **Equity Framework** – Establishes a structure for ensuring disproportionately impacted and historically marginalized communities drive the policy design process.
- **Community Partnership Framework** – Provides details on how we inform, consult, involve, collaborate, and empower co-creative partners and members of the public during the plan development process. Also provides overall community engagement goals and objectives, and provide details on the who, what, where and why of engagement.

- **Goals Framework** – provides an overall framework and structure for goals within the plan, including the outline of plan chapters, key themes that will inform the development of specific goals, and chapter specific vision statements, to influence the Land Use Scenario Process and Policy development phases of the plan update.

Since the kickoff of the plan update in May of 2023, in partnership with the project's Equity team, draft versions of the three frameworks have been developed, and reviewed by City Council during workshops in June, July and October. Following review by Planning Commission, the three frameworks will be updated as appropriate and formally adopted by Council via resolution before moving into the next phase of the project, in alignment with the previously endorsed project charter.

Equity Framework

The equity framework formally identifies a definition of equity for the plan effort, identifies a set of equity principles, and establishes three initial priority equity outcomes for the plan effort:

1. As Vancouver grows, anyone who wants to can afford to live in the city in safe, stable housing.
2. Public transportation is a viable alternative to owning a personal vehicle and offers connectivity across destinations in Vancouver.
3. The project identifies reparative policies that account for the ongoing harm caused by past discriminatory and racist policies, including those related to land use, housing, and the criminal legal system.

The framework at its core establishes a process for evaluating proposed policies and decision-making processes during the planning effort, and implementation of the plan following the conclusion of the planning process.

Community Partnership Framework

The community partnership framework provides an overview of the co-creative process outlined in the public involvement plan, highlights the key advisory groups engaged in the project, the public involvement goals, and the tools that will be used throughout the project to engage community members. It also describes how input will be tracked and inform the overall process and ensure transparency in decision-making.

Community Partners

The Community Partners, which are the core committee of City residents who are tasked with co-creating policy with the City, held their first meeting in June. Over the course of six meetings, the Community Partners have helped develop the overall goals framework, provided input on the community partnership framework, and established the equity priority outcomes outlined in the equity framework.

Engagement & Visioning Process

Over the summer and early fall, the City engaged community members across 20 events on the Comprehensive Plan, creating awareness of the plan update effort and talking with residents about their hopes for the future, what they would like to see more of in their neighborhoods, what would make Vancouver a more equitable and inclusive place to live and how issues such as housing and transportation are affecting them and people they know. Community members were also asked to identify the places, spaces and things that help them feel a sense of belonging in our community. Feedback gathered during these conversations was highly consistent with what was heard during the community visioning process and engagement conducted throughout 2022 and 2023, which is described further below.

The City conducted a robust visioning process, which engaged more than 1,015 community members between June 2022 and February 2023. Since then, staff have engaged more than 1,200 additional community members through one-on-one and small group conversations, Council Community Forums, online engagement and tabling at community events.

During this process, community members were asked about their hopes, needs and concerns, and their big ideas for the future of Vancouver. Some of the most frequently mentioned concerns included public safety, economic opportunity (jobs, education, business development and growth), housing affordability, houselessness, and climate change. Some of the most frequently mentioned hopes for the future include safety in all forms, economic prosperity, affordable housing and preventing displacement, community and neighborhood connections (between places and between people), environmental stewardship and climate resiliency, and care for parks and public spaces.

A detailed summary of themes from the visioning effort was shared earlier this year with members of the Strategic Plan Advisory Committee to help inform their work. Following additional conversations with community members and groups throughout 2023, staff developed a draft community vision statement, which reads:

“Vancouver is an equitable and prosperous community, which ensures that all residents, businesses and organizations benefit from the growth and advancement we make together. Vancouver will be recognized for our quality of life, as evidenced by affordable housing in vibrant, safe and walkable neighborhoods, access to jobs and economic opportunity for all, and resilience to the impacts of climate change.”

Goals Framework

To help ensure alignment and cohesion between the Comprehensive Plan and the Strategic Plan, the draft goals framework was developed from the draft visioning statement, feedback received during the community visioning process, and input from the community partners. The framework includes chapters, represented in **bold text**, along with core goals and desired outcomes that will, once finalized, guide the Comprehensive Plan update going forward.

- **Introduction:** Our Community’s Core Values + Focus Areas
- **Community Feel and Vision:** Inclusive + Affordable + Safe + Shared Prosperity + Walkable

- **Land Use and Development:** Emphasize Mix of Compatible Uses + Increased Livability + Compact and Strategic Infill + Transit Oriented Development + Preservation of Critical Areas and Environmentally Sensitive Lands + Adaptive Reuse + Social Infrastructure
- **Housing:** Affordability + Universal Resident Needs + Culturally Appropriate Housing + Neighborhood Cohesion + Keep Existing Housing Affordable + Focus on Missing Middle Housing Types
- **Equity and Inclusion:** Inclusive and Reparative Policies + Land Use Impacts On Health + Universal Access to Resources (Shelter and Food) + Nurturing and Valuing All People
- **Climate, Environment, Community Health, Sustainability, and Resiliency:** Equitable and Just Transition + Increase Tree Canopy + Stewardship + Supporting Holistic Cycles of Consumption and Production + Waste Diversion + Access to Healthy Food + Physical Health Through Walkability + Response and Resilience to Natural and Manmade Events
- **Economic Opportunity:** Support Businesses and Industry + Facilitate Startups + Innovation + Equity and Inclusion + Circularity+ Creative Vitality
- **Parks, Recreation, Open Space, and Community Well Being:** Enhance Walkability + Increase Green Spaces + Inclusive Public Spaces + Increase Health Opportunities Through Recreation
- **Transportation and Mobility:** Reliable and Frequent Public Transit + Walkability + Multi-Modal Streets
- **Infrastructure, Public Facilities and Services and Utilities:** Targeted Approach to Infrastructure Provision + Expand Services and Programs + Serving More Residents With Less Infrastructure Through Strategic Land Use
- **Annexation:** Sustainable Growth + Maintain Levels of Service
- **Implementation:** Actionable Policies + Alignment with Strategic Plan + Local and Regional Coordination + Accountability

Next Steps

Following this work session, the Goals, Equity, and Community Partnership frameworks will be updated to reflect feedback from the Planning Commission and be further refined with the Community Partners. Following this, staff will bring forward a resolution for formal Council endorsement of the three frameworks. In the next phase of the Plan update process, these frameworks will inform and shape the development of land use alternatives that outline how and where growth could occur over the next 20 years. Each alternative will reflect Council's core policy priorities of safety, equity and climate action and the final version of the draft vision statement included above. Starting early next year, Planning Commission will take part in several upcoming workshops, including a joint work session with the City Council, to inform and ultimately choose a final alternative to include in the updated Comprehensive Plan. The project team anticipates seeking formal Planning Commission and Council endorsement of a preferred alternative in June or July of 2024.

Memo Title

Date

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Attachment(s):

- Presentation
- Engagement and Visioning Process Summary
- Equity Framework
- Community Partnership Framework

September 20, 2023

2022-2023 Community Engagement and Visioning Summary

The following summary includes feedback gathered during community engagement over the course of 2022 and 2023, across a wide range of projects, programs and initiatives, including:

- The Affordable Housing Fund and Housing Action Plan
- Redevelopment projects
 - The Heights District
 - Waterfront Gateway
 - Main Street Promise
- Visioning conversations
 - Pop-ups and tabling at 28 community events
 - One-on-one and small group conversations
- Five City Council Community Forums
- Neighborhood engagement
 - Meetings with neighborhood associations and the Vancouver Neighborhood Alliance
- Community Development
 - Our Vancouver 2045 – Comprehensive Plan
 - Fourth Plain for All Community Investment Strategy
- 2023-24 Biennial Budget
 - Biennial community survey, stakeholder meetings and budget prioritization exercise
- Safe Stay Communities (sites 2, 3 and 4)
- Parks, Recreation and Cultural Services
 - Ida Bell Jones Park
 - Shaffer Park
 - Oakbrook Park
 - Bagley Community Park (ongoing)
 - Accessible playground development at Esther Short and Marshall Parks
- Transportation
 - Transportation System Plan
 - Complete Streets projects

Most Frequently Mentioned Concerns

- Affordable housing
- Homelessness
- Public safety
- Economic opportunity (jobs, business development and growth)
- Climate change

Most Frequently Mentioned Hopes for the Future

- Safety in all forms
- Affordable housing/preventing displacement
- Economic prosperity
- Community and neighborhood connections (between places and between people)
- Environmental stewardship and climate resiliency
- Care for parks and public spaces

Engagement Summary

A synthesis of community feedback is included below by Strategic Plan Focus Area.

Transportation and Mobility

- Vancouver community members would like to see increased access and options when it comes to how they get around the city
 - As one community member put it, “people want to get where they want, when they want, how they want”
- When it comes to getting to work, school, shopping, dining or vital services, many residents feel that driving is currently their only option; this is especially true for community members who work outside of the city or across the river in Oregon
- Many community members report that they don’t feel safe riding a bike and that travel times when taking public transit are often unrealistic or unreasonable
 - For example, many community members described having to choose between a 10-15 minute drive vs a 30 to 50-minute bus ride
- Community members who use a wheelchair or mobility device have reported that uneven sidewalks, streets without sidewalks and unsafe crossings are particular areas of concern
 - These individuals also highlighted the acute impacts they face during construction, which often limits access to one side of a street or requires crossing unexpectedly
 - In the future, they would like to see a city that is easier to navigate and more accessible for all, particularly through universal design standards
- In many parts of the city, residents report that walking does not feel like a viable option
 - For some, this is due to the distance they would need to walk to reach their destination
 - For others, walking does not feel safe due to busy streets, speeding cars, unsafe crossings or intersections, or a lack of sidewalks
 - Concern about a lack of sidewalks was particularly common among young people, families with children and those who live outside the city limits, in areas such as East Minnehaha, Sifton, Orchards and Hazel Dell.
- Many community members said that they would like to see increased access to major destinations and to feel safe walking or biking to their destinations of choice in the future
 - Priority destinations include: grocery stores, schools, libraries, medical providers, retailers, such as the Vancouver Mall, transit hubs and service provider offices
- Some community members said that they will continue to drive, even if safety improvements are made or services are available closer to their home
 - These residents typically cite weather, family size or the need to visit multiple destinations as the reason that they would want to continue driving
 - Among these residents, safer driving conditions, reduced drive times and parking were mentioned as priorities
- When it comes to the Interstate Bridge Replacement project, common community concerns include traffic, construction impacts, such as noise or vibrations, and tolling
 - Younger residents, bike advocates and transit-dependent residents have expressed excitement about access to light rail and the potential for improved access
 - Residents who commute across the river for work, including tradespeople who make more frequent trips, are concerned that tolls will be costly; this concern is more pronounced among lower-income workers who have said that they would prefer no tolls or income-based tolling

Economic Opportunity

- Community members have frequently cited jobs and economic opportunities as two of their top priorities
- When talking about hopes for the future, community members say that they want to see a vibrant local economy, which supports living wages, higher-paying jobs and the ability of all people to grow in their careers locally
- For many community members, jobs are closely linked to other priorities, such as stable housing, physical and mental health and overall quality of life; when talking about the economy, residents also draw connections to their children, family members and friends
- Among those who have more recently moved to Vancouver, job opportunities were frequently cited as one of the central motivators in moving to the city
- Some community members have mentioned Vancouver's proximity to Portland and the broader metro region as particularly beneficial, as residents can pursue greater choice in terms of employment and the ability to grow in a career, while staying in the area
 - At the same time, some of these same residents say that they would rather work closer to home, where they could avoid traffic or long commutes
- Small business owners and entrepreneurs, particularly those who come from historically marginalized groups, report multiple barriers to starting and running a business, including:
 - Lack of access to capital
 - Lack of suitable space
 - Unaffordable leases
- The Vancouver's Farmers Market is often cited by community members and small business owners as an essential venue for business incubation
 - Community members report especially positive feelings toward the Farmers Market and routinely mention that they would like to see it or similar businesses expand (to other neighborhoods, times of the week or year, etc.)
- Several local business owners also mentioned their appreciation for what one community member called Vancouver's "cultural of support for businesses"
 - Groups such as the Greater Vancouver Chamber of Commerce, Hispanic Metro Chamber, Vancouver's Downtown Association, Uptown Village Association, East Vancouver Business Association and Columbia River Economic Development Council were cited as examples of groups that offer vital assistance to local business owners
- While many business owners report that Southwest Washington is a good location to operate a business, they are also concerned about public safety, housing availability and the possible impacts of increased taxes

Housing and Human Needs

- Homelessness, housing and childcare were among the top priorities mentioned by community members over the past year
- When talking about their hopes for the future, many community members said that they would like to see safe, affordable housing available to all people in Vancouver and an end to unsheltered homelessness
 - For lower income residents, renters and young people, housing insecurity was frequently mentioned as a major concern
 - Among these groups, some have shared a desire for greater protections for renters and specific housing supports for people who are elderly or permanently disabled

- Some community members have said that they would like to see programs that expand access to affordable homeownership
- When it comes to housing concerns, community members have most frequently mentioned:
 - Concerns that housing costs have risen faster than wages
 - Families being forced to live in unsafe or undignified conditions, including multiple families sharing the same home
 - Concern that they will have to leave the region or move further away from Vancouver to afford a place to live
 - Belief that luxury condominiums and large single-family homes are not the type of housing that our community needs
- There is significant interest in increasing access to affordable childcare; residents report that the current system may fail to meet the needs of middle-income residents or those whose wages are too high for some income-based programs
- On the topic of homelessness, the vast majority of community members have said that they support community efforts to:
 - Get people off the street and into permanent housing
 - Connect people to vital services
 - Treat people experiencing homelessness with dignity and respect
 - Reduce negative community impacts of unsheltered homelessness
- Community members have expressed differing views, however, about the actions that should be taken to address homelessness:
 - Although community members are generally supportive of the City's Safe Stay and Safe Park program, some residents have opposed particular locations or suggested that supportive services will have negative impacts on neighbors
 - There is a persistent belief, among some, that services and supports attract people experiencing homelessness to Vancouver
 - Additionally, while some people see homelessness as a failure of systems, a significant number of community members see homelessness as a personal or moral failing
 - Among these residents, the frame of deservingness is often employed to explain who should or should not receive help
- Expanding access to healthcare, especially mental health and drug treatment services, was also frequently mentioned by community members
 - Some residents have described long wait lists or delays in receiving care
 - Some individuals and families have reported difficulty navigating complex social service systems or eligibility criteria that restrict access to only those receiving Apple Health, Washington State's Medicaid program

Vibrant and Distinct Neighborhoods

- Community members have particularly positive feelings about Vancouver's parks, open spaces and public events, these were routinely cited as sources of connection, recreation and health
- Residents have expressed varying degrees of pride in and attachment to the neighborhoods in which they live
- When asked about hopes for the future of their neighborhoods, community members have frequently pointed to:
 - Safety (reduced crime and the desire to feel safe)
 - Walkability
 - Access to amenities

- Recreational opportunities
- Relationships and connections to neighbors or community groups
- Interest in cultural and community gathering spaces
- Support for neighborhood schools
- Additional conversation is needed, as part of the comprehensive plan process, to better understand the needs of specific neighborhoods and how residents would like to navigate potential land use changes
- During recent engagement for Parks, Recreation and Cultural services, community members have mentioned interest in a wide range of amenities and improvements, including:
 - A desire for more outdoor gathering spaces with flexible uses, such as picnic shelters, small event venues, etc.
 - More diversity in sports courts or fields that go beyond basketball and soccer, such as spaces for disc golf, bocce, futsal and pickleball
 - Spaces and amenities in parks that appeal to broad age ranges, including middle/high school, adults and seniors
 - City-operated dog parks
 - Splash pads and/or water play options in more parks (outside of downtown)
 - The need for accessibility to go beyond just ADA curbs and picnic tables, exploring how we make truly inclusive public outdoor spaces that have play opportunities for everyone
 - Interest in protecting or expanding greenspaces through habitat restoration, native plantings, tree preservation and tree planting
 - The desire to continue finding ways to honor indigenous tribes, natural features of the area and lesser-known Vancouver histories through the park-naming process
 - Ways to make recreation programs more affordable and accessible to residents, beyond the City's existing scholarship program
 - Expanded recreation programming, particularly for children ages 11 to 14

Culture and Heritage

- Vancouver's rich history is a point of pride for many community members, especially longtime residents and those who have grown up in the community
- Community members have consistently mentioned the importance of cultural, religious and historical institutions and community events, as part of what makes Vancouver special
 - Residents report that these institutions and events help them to build relationships, connect with neighbors and strengthen their sense of belonging in the community
 - Residents say that cultural organizations, in particular, are sources of meaning, tradition, connection and support, especially for older residents, refugees, recent immigrants and those new to Vancouver
 - Seeing their culture celebrated and appreciated by the broader community was also a theme mentioned explicitly by Latino, black, Pacific Islander and LGBTQ+ community members
 - In addition to calling out events such as concerts and movies in the park, community members also shared appreciation for specific cultural events, including: Dia de los Muertos, Four Days of Aloha, the Juneteenth Freedom Celebration, Multicultural Resource Fair and Vancouver Pride
- There is broad support for holding additional cultural and community events in the future, especially in areas outside of downtown

- When talking about their hopes for the future, community members mentioned their desire to see additional venues for arts, culture, entertainment and community building, including comedy clubs, studio spaces, venues for live music and performing arts, along with more community centers and libraries
- Many community members take pride in the city's public art, especially the mural program
 - Some community members said that they would like to see art expand to other areas of the city, including neighborhoods that currently lack public art
- Some longtime residents have also expressed concern that those moving to the community may not be aware of Vancouver's history and regional culture
 - While this sentiment is sometimes expressed alongside concerns about how the community is changing, there is a genuine desire to expand opportunities for learning about history; these residents would like to see more storytelling, public art and celebrations of the city's history

Safe and Prepared Community

- Across a wide range of projects and engagements, community members have consistently identified safety as their top priority and hope for the future
 - Residents report specific concerns with vehicle theft, burglaries, break-ins and property crime; many community members said that they don't want to worry about their car getting stolen from their driveway or their catalytic converter stolen every time they go shopping
 - Violent crime was mentioned by a significant number of people, as well, including a belief that violent crimes, such as shootings, could "spill over from Portland"
 - Some community members report feeling unsafe walking at night, particularly downtown; others have said that they no longer feel safe walking on certain trails, including the Burnt Bridge Creek Trail
 - These community members have most commonly cited negative encounters with unhoused residents, as well as people who appear to be experiencing mental health crises or openly using drugs
 - Among the business community, retail theft and property crime are major concerns
 - Larger retailers report thousands of dollars of theft each month
 - Some businesses have experienced multiple break ins or robberies
 - Retail workers have reported feeling unsafe at work or being directly affected by robberies, assaults or thefts
- Community members who are black, Latino, Pacific Islander and LGBTQ+ also reported specific concerns about safety
 - Some community members mentioned negative interactions with police and concerns about police use of force, particularly shootings that have taken place since 2019
 - Others have said that they don't feel safe or welcomed in certain parts of Vancouver or Clark County; demonstrations by groups, such as Patriot Prayer or the Proud Boys, and visible displays of the Confederate flag were cited by some residents as specific incidents that have made them feel unsafe
 - LGBTQ+ community members have also shared varied experiences and perceptions of safety in the community; while some longtime residents and those who have grown up

- in Vancouver have shared their belief that the community has become more accepting and inclusive over time, others report feeling unsafe.
 - On the other hand, people who have moved to Vancouver recently (in the past five years), have shared stories of feeling a greater sense of safety and belonging in Vancouver; perhaps unsurprisingly, this sentiment seems to be most common among people who have moved from less LGBTQ+-friendly communities; additional engagement is needed to better understand how to strengthen feelings of belonging and safety for all community members
- Some community members have also pointed out that safety is directly related to other issues, such as mental health, poverty and a lack of economic opportunity
 - These community members have said that they see investments in economic growth, job creation, housing and social services as ways to make our community safer
 - Some would also like to see additional investments in co-responder services to better respond to community members experiencing a mental health crisis
- Among community members concerned about climate change, resiliency, preparedness and adaptation were frequently mentioned as priorities
- Disaster preparedness was mentioned by a very small number of residents
 - They would like to see greater investment in earthquake-resilient infrastructure and community preparedness, especially at the neighborhood and household-level

Connected and Resilient Infrastructure

- When talking about roads and streets, safety continues to be a high priority for community members, especially those living on or near major corridors, such as Fourth Plain Blvd., Mill Plain Blvd., Andresen Rd. and 162nd Ave.
 - Many residents report that they don't feel safe biking or walking in certain parts of the city, especially in areas with high-speed traffic that lack sidewalks and bike paths
- When asked to describe their hopes for the future of their neighborhood, many community members have described a neighborhood that is more walkable, connected and easy to get around with nearby parks and amenities
 - Although few community members use the term, many have described a 15-minute neighborhood as what they would like to see in the future
- There is growing awareness among some residents that historic land use policies have limited their access to certain services, such as grocery stores, restaurants or coffee shops
 - Additional conversation is needed during the comprehensive plan process to better understand the needs of specific neighborhoods and the types of change that people want to see
- Community members have also said they want to see the City prioritize maintenance and care for existing infrastructure, such as roads, parks and water systems
- Community members report being generally satisfied with the city's roads, however pavement quality was mentioned by some as an area of concern, especially on neighborhood streets that are paved less frequently
- Projects that have languished without funding, including those on the unfunded list of the Transportation Improvement Program (TIP), were also mentioned by a few community members as sources of frustration

- Aside from concerns about climate change or disaster preparedness, resilience was not a common phrase that community members have used to describe infrastructure
 - Instead, residents have been more likely to talk about streets that are safe and easy to get around, and services that are reliable
 - Additional engagement for the City's Water Resiliency Strategy will provide further information about community needs and attitudes toward resilient infrastructure

High Performing Government

- Residents have consistently said that they want the City to be responsible stewards of public funds and to deliver services that are responsive, accessible and accountable
- Community members have highlighted specific concerns about emergency services, including:
 - Police and fire department response times
 - Currently, some community members feel that the City does not respond to 911 or 311 calls in a timely fashion
 - This has led some residents to report that they no longer feel that it is useful to call the police for certain crimes, such as petty theft or property crimes
 - Community members have said that they hope and expect 911 response times to improve in the future
 - Concerns over perceived lawlessness
 - Some community members feel that police are not enforcing laws or that they have been prevented from enforcing certain laws by recent legislation
 - Desire to reduce police-use-of-force incidents
 - Officer-involved shootings continue to be a major concern for many community members; while some of these community members have expressed hope that recent reforms and the implementation of a body camera program will improve things, some residents have also called for additional steps to be taken, such as civilian oversight
- Community members have also said that they would like to see police services that are accountable, transparent, responsive to community concerns and focused on building relationships with the community
 - Some community members said that they would like to see greater engagement between the police department and community groups, including younger residents, recent immigrants and black, Latino, Pacific Islander and LGBTQ+ community members
- Community members, including local disability rights advocates, have also voiced concerns about the accessibility of City programs and the need to decrease barriers to accessing social services and programs, including:
 - Difficulty finding information or knowing who to contact
 - Lack of language translation and interpretation services
 - Lack of trusted channels of information
 - Prohibitive costs to participate
 - Access to transportation
- Some residents have also called for greater transparency in how the City spends public funds
- Some community members feel that the City staff is not genuinely interested in their input and will "do whatever they want" regardless of community input

OUR VANCOUVER

OUR FUTURE 2045

EQUITY FRAMEWORK

Prepared by Seva Workshop
DISCUSSION DRAFT May 15, 2023

Introduction

The Vancouver Comprehensive Plan is one of our community’s most important tools to help plan for the future. It provides the overall long-term vision and policy direction for managing the built and natural environment in Vancouver, and providing necessary public facilities. State law establishes the elements that cities with fast-growing populations must plan for, such as land use, housing, utilities, and transportation. While minor updates may be made as frequently as once a year, in 2023, the City of Vancouver embarked on a full Comprehensive Plan update to review and revise the entire plan to guide growth and development through 2045. This update is a major opportunity to integrate equity throughout the Plan.

Why Have an Equity Framework?

Comprehensive plans are major drivers of whether communities are equitable or not because they guide the distribution of rights and resources. Without an intentional focus, plans are likely to continue current inequities. An Equity Framework summarizes the process and principles for planning teams to consider equity in their technical work.

Equity Definition

Equity. A state or system of fairness or justice that recognizes and balances different challenges, opportunities, and needs across groups of individuals.

Equity Principles

- Understand and acknowledge the City’s full historical context, including past harms and seek opportunities to rectify them.
- Think beyond individual programs and projects to institutionalize equity in sustainable and meaningful ways.
- Prioritize communities that have historically been marginalized in future visioning for the built environment.
- Engage the community in creative ways that create a shared sense of vision, empowers people, and creates learning opportunities, trust, and relationships that last beyond this project.
- Be explicit about systemic racism in planning and the racial disparities that persist, in part because of this.

Priority Communities

The accompanying Equity Analysis and Equity Team discussion identified these communities as historically marginalized and/or most vulnerable. These groups will be centered in the engagement and planning process.

- BIPOC community
- People with low incomes
- People with disabilities, including neurodivergent
- Youth and children
- LGBTQ+ individuals
- Renters
- People without an address/ people experiencing homelessness
- Small business owners
- Refugees
- Undocumented population

Comprehensive Plan Framework

The framework is a simple process that can be used for every element of the Plan. Community members will be engaged at each step.

5. Analyze and refine goals, policies, and strategies with an equity lens. In partnership with community, ask:

- Who benefits and who is burdened by implementation of this policy? Does this policy bring the City closer to equity?
- What are potential unintended impacts of this policy? How can we monitor and mitigate these impacts?

4. Propose goals, policies, and strategies.

Develop goals, policies, and strategies that would bring the City closer to achieving equity by addressing root causes.

STEPS 1-5 IN ITERATION WITH COMMUNITY

3. Assess baseline for gaps and root causes.

Collect and analyze data to identify populations and regions farthest from achieving the desired outcome according to the metrics. Build on the context and conditions analysis. Investigate disparities for their root causes (in other words, ask “why”) and identify the gaps that are within the City’s influence.

6. Implement with transparency and accountability.

Communicate the outcomes and continue engaging community members who have contributed to the planning process.



Public Involvement Plan Summary

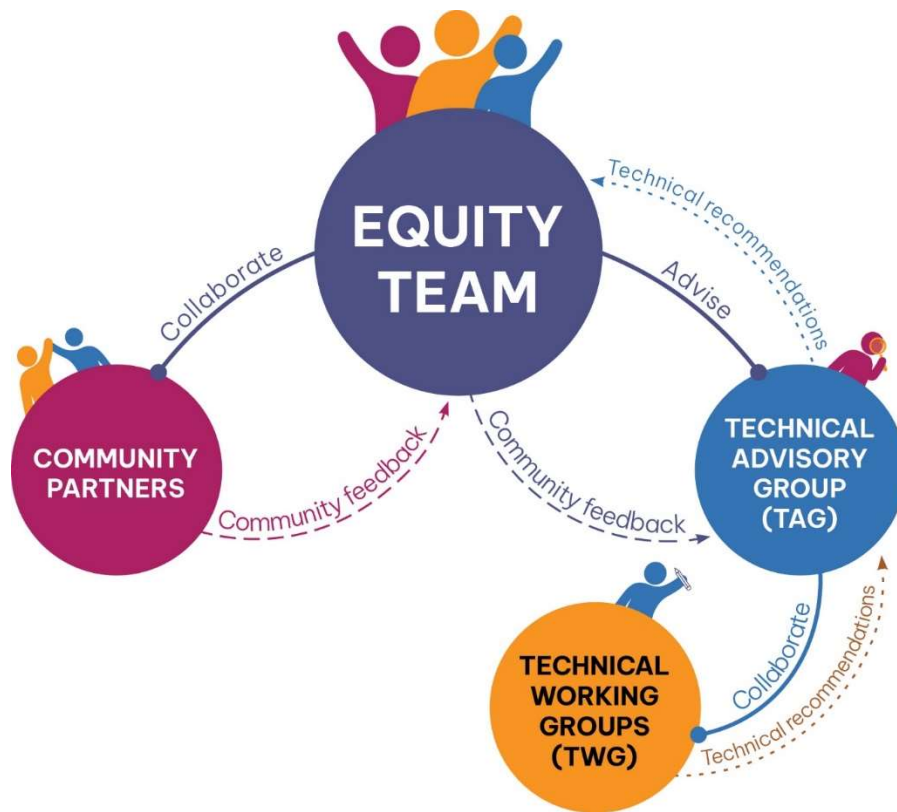
OUR VANCOUVER is a two- and a half-year initiative where community members and the City will embark on a co-creative process to update the City's Comprehensive Plan and Title 20 of the City's Municipal Code. The OUR VANCOUVER Public Involvement Plan is a strategic document that outlines the methods and strategies for engaging and involving the public in the decision-making processes, policy development, and project implementation. Through this process, the City is committed to equity, transparency, and meaningful engagement with the public to foster trust and create equitable outcomes for all Vancouver residents.

This framework summarizes the co-creative process described in the Public Involvement Plan, the key advisory groups engaged in the project, the public involvement goals, the tools that will be used throughout the project to engage community members, how input will be tracked and inform the process, and a general schedule of engagement events. Additional details are provided in the Public Involvement Plan.

Co-Creative Process

As part of the project's commitment to engage in a co-creative process and center equitable engagement, the project team has implemented strategies to partner with community representatives. These **Community Partners** have deep connections with local communities and strong existing relationships that will help facilitate engagement and lead to a co-creative process. Community Partners help facilitate engagement, bridge communication gaps, and provide valuable insights into the needs and priorities of the communities they serve.

Co-creation through the comprehensive plan update means Community Partners work directly with the project team as members of the OUR VANCOUVER Equity Team and as community engagement liaisons to facilitate conversations with community members and lead "Envision Events" (described further below). Co-creation will shift power dynamics and give community members a direct link to influence the technical analysis and policy development included in the comprehensive plan.



The **Equity Team** includes Community Partners and project team staff. Their role is to ensure integration between the technical recommendations, community feedback and the **OUR VANCOUVER** Equity Framework. The Equity Team will review technical recommendations, analyze community feedback collected during Envision Events and report back to the project team to ensure equity is centered throughout the project and community priorities are amplified, evaluated, and included, to the extent possible, in the final plan.

The **Technical Advisory Group** will collaborate closely with the Technical Working Groups to identify and share technical recommendations with the Equity Team. The Technical Advisory Group will include project team staff, partner agency staff, and other interested parties that have technical expertise or knowledge that will help inform the technical analysis and plan development.

The **Technical Working Groups** will include city and consultant technical staff. Technical Working Groups will be topic-area focused (housing, land use, transportation, public services, etc.) and meetings will occur throughout the project to inform existing conditions analyses and drive the technical work.

Public Involvement Goals

1. Establish a co-creative process between the City and the Vancouver community that shifts power dynamics and elevates the voices of equity-priority communities.
2. Build trust through transparent two-way communication channels that humanize the project, advance community knowledge, create community ownership, and build long-lasting relationships.
3. Emphasize Vancouver pride to highlight future benefits at a personal, community, and city level to encourage participation throughout the process.
4. Establish comprehensive plan policies that are reflective of community and agency input and will advance the implementation of the plan.

Communication and Engagement Tools

The table below identifies the communications and engagement tools that will be used specific to each audience involved in the comprehensive plan update process. The communications and engagement tools are divided into three categories:

- **Informational tools:** designed as one-way communication to deliver information about the project to all interested parties.
- **Envision Events:** is a broad term used to describe in-person and online events to engage the populations elevated by Community Partners during each project phase and gain feedback to shape the vision, land use scenarios, and policy development and implementation. Envision events will be designed to engage people in the project and seek feedback from a broad cross section of the community and events focused on gaining input from equity-priority communities.
- **Meetings:** designed to collect and report out on input received. Project working and advisory groups will be internal to the project. Planning Commission and City Council meetings and workshops will be external and provide additional opportunities for public input.

Key Audience	Informational Tools				Envision Events		Meetings				
	Emails	Social media	Paid media	Earned media	Be Heard	In-person events (i.e., tabling, interactive workshops, presentations, community conversations)	Community Working Group Meetings	Equity Team Meetings	Technical Working Group Meetings	Technical Advisory Meetings	PC/CC Workshops/ Meetings
Equity priority communities*	X	X	X	X	X	X					X
Local Businesses	X	X	X	X	X	X					X
Neighborhood Associations	X	X			X	X					X
General Public	X	X	X	X	X	X					X
Community Partners	X	X			X	X	X	X		X	X
Equity Team	X	X					X	X	X		X
Project Team Staff (City and Consultant)	X	X	X	X	X	X	X	X	X	X	X
City Elected and Appointed Officials	X				X	X					X
Technical Advisory Group	X						X	X	X	X	X
Technical Working Group	X								X		X

*Equity-priority communities are those that have historically been excluded from or who have not participated in City planning processes. These groups must be centered in the engagement and planning process and include BIPOC community, people with low incomes, people with disabilities, including neurodivergent, youth and children, LGBTQ+ individuals, renters, people without an address or experiencing homelessness, small business owners.

PC = Planning Commission

CC = City Council

Digital Engagement

The Be Heard website (<https://www.beheardvancouver.org/plan2045>) will be used throughout the project to share information about the process, details on upcoming events, and to interact with the community. Project information and engagement tools will be

updated and added to the Be Heard website at key milestones. **OUR VANCOUVER** will leverage existing City of Vancouver social media channels to inform the public of project milestones, public-facing events, and opportunities to provide feedback.

Data Analysis, Reporting, and Evaluation

The **OUR VANCOUVER** Accountability Matrix has been designed to collect data and feedback throughout the planning process. The matrix will track comments received by mail, email, at community events, and at Envision Events. The accountability matrix will be updated following events and reviewed with Community Partners to ensure underrepresented communities are being engaged and their feedback prioritized. This information will be used by the Technical Working Groups to ensure community feedback is being incorporated into planning scenarios. The final matrix will be included as an appendix to the Comprehensive Plan Update.

Evaluation surveys will be administered before and after Envision Events to ensure participants find the information relevant and accessible.

Engagement Calendar

Phase 1: Visioning		
May		
Timeline	Event	Location
May 13	Alley Market	Kindred Home Supply
June		
June 3	Farmers Market and Multicultural Resource Fair	Esther Short Park
June 12	Equity Team Meeting: Community Partner Onboarding	In-Person
June 10	Pride Block Party	7 th Street
June 17	Juneteenth	Esther Short Park
June 28	Equity Team Meeting	Virtual
July		
July 7	Movie in the Park	Bagley Community Park
July 8	Vancouver USA Pride	Esther Short Park
July 21	Movie in the Park	Fruit Valley Park
July 28	Movie in the Park	Leroy Haagen Memorial Park
TBD	Community Partner Working Group – Envision Event Prep	Virtual
Ongoing	Community Partner Envision Events	Various

July 18	Equity Team Meeting	Virtual
August		
August 1	National Night Out	Various
August 4	Movie in the Park	Fort Vancouver
August 11	Movie in the Park	Marshall Park
August 18-20	Latino Festival	Esther Short Park
TBD	Community Partner Working Group - Phase 1 Report Out	Virtual
TBD	Equity Team Meeting	Virtual
Phase 2: Land Use Scenarios		
September		
September 9	Peace and Justice Fair	Esther Short Park
September 23	Harpers Playground Fundraiser	Marshall Park
TBD	Community Partner Working Group - Conversation Kit Prep	Virtual
Ongoing	Community Partner Envision Events	Various
TBD	Equity Team Meeting	Virtual
October		
October 7	Old Appletree Festival	Appletree Park
Ongoing	Community Partner Envision Events	Various
October 22 or 28 (TBD)	<i>Dias de Muertos</i>	Esther Short Park
November		
Ongoing	Community Partner Envision Events	Various
TBD	Community Partner Working Group - Phase 2 Report Out	Virtual
TBD	Equity Team Meeting	Virtual/In-Person
Phase 3: Policy Development and Implementation		
Q2 2024		
TBD	Equity Team - Agenda Setting	Virtual
TBD	Community Partner Working Group - Conversation Kit Prep	Virtual
TBD	Community Partner Working Group - Phase 3 Report Out	Virtual
TBD	Equity Team Meeting	Virtual/In-Person
Ongoing	Community Partner Envision Events	In-Person and Virtual



Wood Duck Springs Comprehensive Plan and Zoning Map Amendment

Vancouver Planning Commission Public Hearing November 14, 2023 – Continued from October 24



Bryan Snodgrass

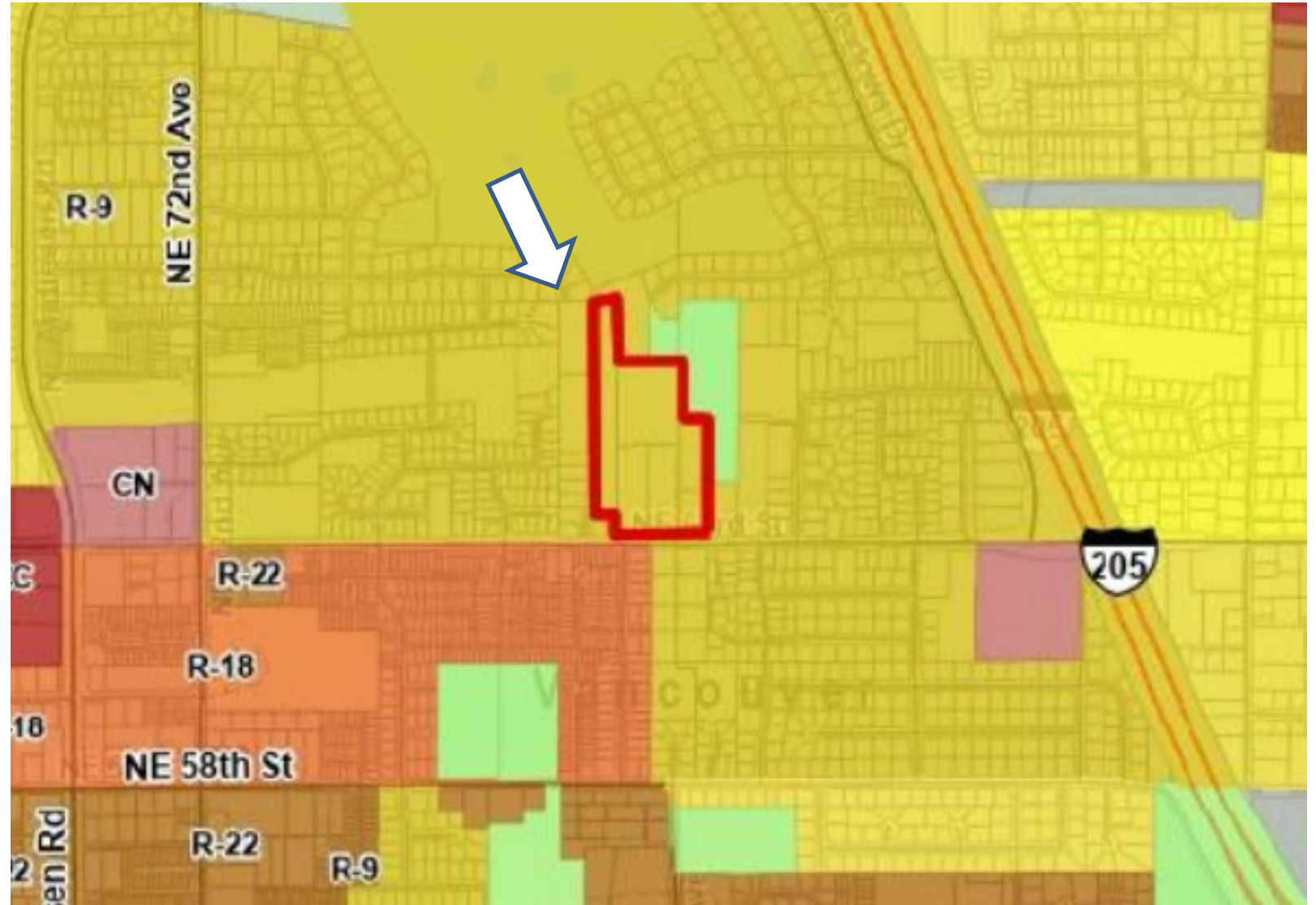
Principal Planner

City of Vancouver Community Development Department

Wood Duck
Springs
Comprehensive
Plan and zoning
map change -
UL/R-9 to UH/R-
22 and
Commercial/CC
on 13.9 acres on
63rd Street at
82nd Court



Wood Duck Springs map change – Regional zoning



Wood Duck Springs map change – Conceptual site layout for approximately 244 housing units with townhomes surrounding apartments and commercial

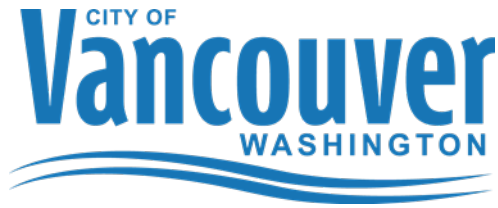


Wood Duck Springs map change – Analysis

- Rezone would contribute to local and citywide housing needed to address local housing shortage and comply with new state laws, at a location including a commercial component, along a major roadway adjacent to a park.
- Taller apartment buildings proposed in center of site, with townhomes at edges. Wetlands at north end of site to remain undeveloped.
- Additional housing enabled by rezone would add to public service demand, but within capacities of existing systems. City review of applicant's traffic analysis estimates no Level-of- Service failures resulting from proposal.
- One public comment with concerns about project traffic adding to speeding concerns on NE 84th Avenue between 63rd and 58th Streets southeast of rezone.

Wood Duck Springs map change – Staff recommendation and sample motion

- Staff recommends approval of Wood Duck Springs rezone from Urban Low Density/R-9 to Urban High Density/R-22 and Commercial/CC as indicated in staff report for the November 14, 2023 public hearing.
- Pause for Commission questions, applicant presentation, public testimony, Commission deliberation and recommendation.
- Sample Motion: Based on the November 14, 2023 public hearing discussion and staff report findings, the Planning Commission recommends that the City Council _____ the Wood Duck Springs Comprehensive Plan and zoning map designation change as described from Urban Low Density/R-9 to Urban High Density/R-22 and Commercial/CC



Planning Commission

TO: Chair Ledell and Planning Commission

FROM: Bryan Snodgrass, Principal Planner, bryan.snodgrass@cityofvancouver.us, 360-487-7946

SUBJECT: Public hearing review of Wood Duck Springs proposal to amend Comprehensive Plan and zoning designations for a 13.9 acre property at approximately NE 63rd Street and 82nd Court from Urban Low/R-9 to Urban High/R-22 and Commercial/General Commercial

HEARING DATE: 11/14/2023

REPORT DATE: 11/2/2023

PROPONENTS: Sergei Cormanitchi, represented by Jayson Taylor of PLS Engineering

RECOMMENDATION: Forward a recommendation of approval to the City Council

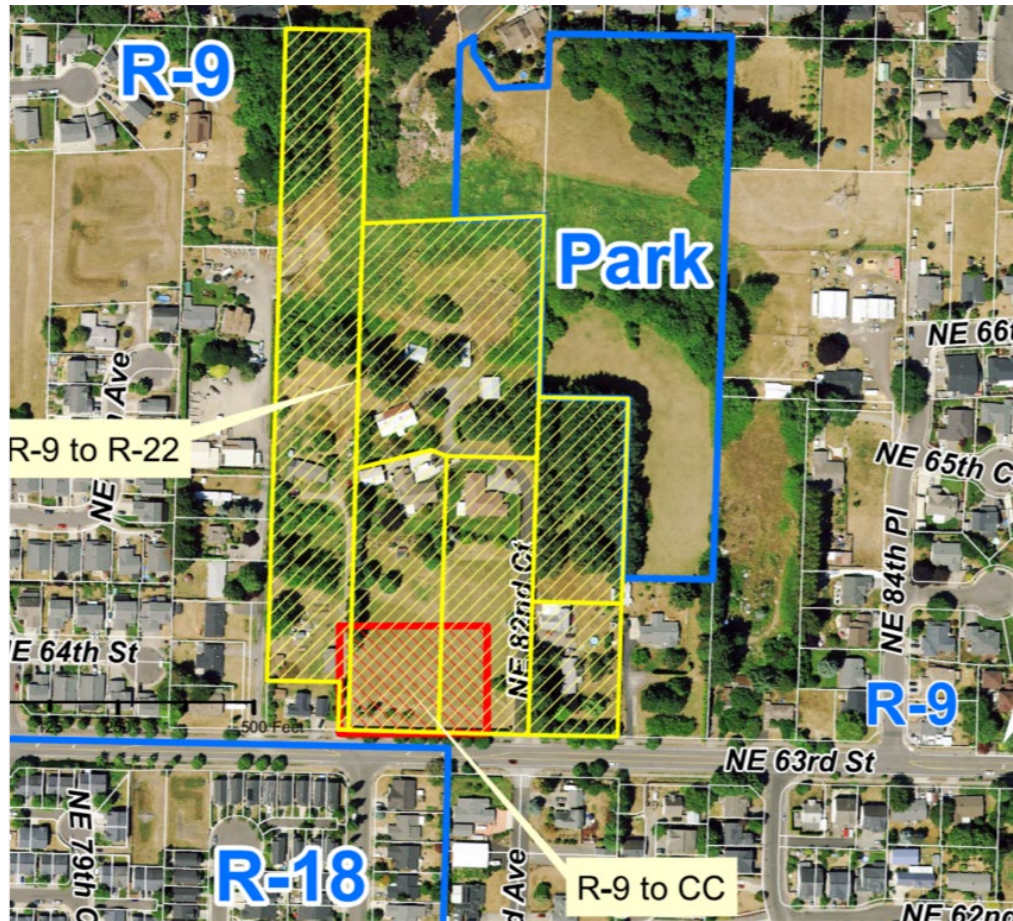
I. BACKGROUND AND REVIEW PROCESS:

The Growth Management Act requires Comprehensive Plan changes to be reviewed collectively and no more than once per year. Zoning changes not involving the Comprehensive Plan may be reviewed at any time and independent of one another if needed. The Comprehensive Plan and associated zoning map changes reviewed in this report was continued to November 14 from the original Planning Commission public hearing date of October 24, 2023, to allow for completion of applicant materials following a revision in the proposal.

Notice of the original October 24, 2023 Planning Commission public hearing was provided through publication in the *Columbian* newspaper. A SEPA Determination of Non-significance (DNS) was issued and published in the *Columbian* on September 21. Individual mailed notice of the both the original October 24 and continued November 14 hearing dates were sent to property owners and occupants of lots located within 500 feet of the proposal, and the site was posted. At report date only one formal comment has been received by staff.

PROPOSAL AND RECOMMENDATION:

1. Wood Duck Springs – Urban Low Density/R-9 to Urban High Density/R-22 and Commercial/CC on 13 acres at 63rd Street and 82nd Court



The proposal is located on the north side of 63rd Street approximately one mile north of Vancouver Mall. The rezone site contains several existing single-family homes, outbuildings, and vacant land. North and east of the rezone site is Kelly Meadows Park, zoned R-9. East and west along 63rd Street are large lot single family homesites also zoned R-9. To the south across 63rd Street are smaller single- family homes zoned R-18 and R-9.

The application envisions likely development of the site with a mix of up to 218 housing units, primarily new market rate apartments and townhomes, and retention of two of the existing single-family homes at the center of the site, along with a one-acre commercially zoned area at the south of the site fronting 63rd Street. The applicant's conceptual future site layout submitted shown in Attachment A herein indicates townhomes are envisioned on the east and west portions of the site, with apartment buildings located more centrally. Development is not envisioned at the north end of the site which contains wetlands. Primary future access to the site will likely be from 63rd Street at the intersection of 81st Avenue.

The applicant originally proposed R-18 zoning throughout the site, but revised the proposal to include a commercial component on advice of City staff to better address City policies related to 15-minute neighborhoods, and climate. The proposal was also amended to request R-22 zoning.

The applicant's traffic analysis, posted separately with the November 14 Planning Commission public hearing materials, estimates that the maximum possible development under the proposed R-22 and CC zoning would result in 2,184 average daily vehicle trips, in comparison to 1,050 average daily trips from maximum development under the existing R-9 zoning. The C-Tran #32 bus runs north and south along Andresen Road approximately ½ mile west of the site, with service between downtown and the Vancouver Mall Transit Center, at generally 30-minute intervals.

One comment has been received to date raising concerns about traffic from the development adding to existing speeding on NE 84th Avenue between 63rd and 58th Streets, which is located southeast of the site and provides the most direct route from the site to and from the I-5 freeway. See Attachment B.

More detailed traffic analysis will be required at the time of site plan review.

The site is served by Walnut Grove Elementary, Gaiser Middle and Fort Vancouver High schools in the Vancouver School District. Information from the district on the current status of those schools is pending. Overall, the district has faced a general decline in enrollment from pre-pandemic levels. District school impact fees are \$2,486 per multi-family unit.

Analysis, findings, and recommendation

Staff finds that the Wood Duck Springs rezone proposal complies with applicable criteria for Comprehensive Plan and zoning map changes included in [VMC 20.285.050](#). The rezone would facilitate significant market rate multi-family housing along a major roadway, and the commercial component of the rezone could potentially provide close by shopping and employment opportunities for residents in the development and surrounding residential areas.

Staff finds the proposal to be consistent with [Strategic Plan](#) focus areas of Vibrant and Distinct Neighborhoods, and Climate and Natural Systems. The proposal is also consistent with [Comprehensive Plan](#) policies H-1, Housing Options; H-5, Housing Placement near Services and Centers; CD-5, Mixed Use; CD-10, Complimentary Uses; CD-14, Connected and Integrated Communities; and CD 16, Sustainability.

Staff recommends the Planning Commission forward a recommendation of approval to the City Council.

[illegible]

General Information

Applicant:

Songbird Homes

Contact: Nick Zodrow
10013 NE Hazel Dell Ave., PMB 504
Vancouver, WA 98685
(360) 901-1024
nick@songbirdhomes.com

Owners:

Songbird Holdings LLC

Contact Same as above

Rick & Kathleen Richart

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Vancouver, WA 98662
rickr@richartbuilders.com

Linnley & Margarete Richart Trustees

6506 NE 82nd Ct.
Vancouver, WA 98662
robertr@richartbuilders.com

Therese D Griffin & James Crawford

8008 Unit A Ne 63rd St .
Vancouver, WA 98662
360-608-7008

Project Contacts:

PLS Engineering

Travis Johnson, PE
604 W Evergreen Boulevard
Vancouver, WA 98660
(360) 944-6519
pm@plsengineering.com

Location:	SW & SE ¼ of Section 8, T2N, R2E, WM
Parcels:	105241000, 105242000, 105190-000.005;010, 986042813
Address:	8008 Unit A ,8208 and 8122 NE 63rd St. 6506 and 6510 NE 82nd Ct.
Project Size:	13.86 acres
Zoning:	R-9
Comprehensive Plan:	UL
Current Use:	Single family residential
School District:	Vancouver
Elementary:	Walnut Grove
Middle School:	Gaiser
High School:	Fort Vancouver
Water District:	Vancouver
Sewer District:	Clark Regional
Fire District:	Vancouver Fire
Park District:	B
Transportation Impact Fee:	Pacific

Project Discussion

The Wood Duck Springs Comprehensive Plan and Zoning Map Amendment proposes to rezone parcels 105241000, 105242000, 105190005, 105190010, 105190000, 986042813 from R-9 to R-22 with one acre to be designated as CC (community commercial). This involves a Comprehensive Plan Amendment to move the parcels from an Urban Low to an Urban High/commercial designation. The site encompasses six parcels totaling approximately 13.89 acres. Currently the project site includes a mix of existing single-family residences and vacant land. Future development plans for the site would likely retain two of the existing homes as an office or amenity space with the remainder of the site developed with apartments and condo/townhomes in a variety of densities. The acre of commercial land would be developed as an integrated commercial use. While a specific use is not proposed for this land, an 8,000 sqft fitness center/gym would fit well with the overall site and this use was used to evaluate potential traffic impacts. The applicant intends to provide a diversity of unit types and unit styles so that a wider range of housing needs may be met. This would include apartment units ranging from 1 to 3 bedrooms, townhouse style units that are 2 stories without garages and townhouse style units that are larger and have garages.

The applicant is desirous of creating homes for sale at the bottom portion of the ownership market as they believe that the first step to wealth creation is a long-term controlled housing costs created via a 30-year mortgage. But the applicant is concerned about the negative legal environment for condominiums in Washington State at this time and would most likely create rentals for those units. One of the options that the applicant is reviewing is to build larger 3-bedroom units that could be condo converted at a later date if the liability laws become more favorable. The current applicant would likely also be the one to develop the site including site and building construction. A formal application for site development will be submitted after the proposed comprehensive plan and zoning map amendment.

Neighborhood Layout –

The applicant would propose that the 2 story tall townhouse style units would be built along the western side of the project in an attempt to build into the existing neighborhood. This is the only section of the abutting property that is expected to remain nearly the same for the foreseeable future due to the small existing lots as well as a long term commercial business; all of which are served by the existing private road that directly abuts to the projects west side. The applicant would also look at placing more townhouse units along a portion of the east side in an attempt to blend into the neighborhood as the parcel to the east with an existing house would be large enough for some infill redevelopment in the future.

The project north and a portion of the east abuts to City of Vancouver open space that is an undeveloped park. The applicant has already had discussions with the City of Vancouver Parks department in efforts to understand future park (Kelly Meadows) development plans as well as how the projects could benefit each other through better planning. This discussion included being able to generate better open space utilization, reducing expected parks impact on wetlands by moving a planned path from parks land to the applicant land, options for recreation along the trails, exploring build/PIF credits, trail connectivity, donations, trail materials within wetland buffers, land donation and overall planning and timing.

Density:

With 12.89 acres allocated to the residential zone, the site could accommodate a maximum of 283 units (22 units per acre). The current site plan only shows 218 total units within the developable portions of the site. Under the current zone (R-9) the maximum density could be approximately 105 single family units.

Traffic Impacts:

Apartment buildings generate 6.74 average daily trips (ADT) per unit and gyms/fitness centers generate 34.5 ADT per 1000 sqft of building area according to the ITE trip generation manual. Single-family homes generate approximately 10 ADT per unit. Development under the proposed plan would generate 2184 ADT, and development under the current zone would likely generate 1050 ADT.

The applicant has prepared a traffic study that evaluates the potential impacts of the proposed development. This study shows that there is adequate capacity within the nearby roadways and intersections to accommodate the proposed project and the increase in density.

The study made the following conclusions:

1. "The proposed Wood Duck Springs Comprehensive Plan Amendment/Zone Change project will include the rezone of six properties located at/near 8208 NE 63rd Street in Vancouver, Washington. The proposal will rezone the properties from Urban Low Density (R-9) to Urban High Density (R-22) and Community Commercial (CC), where approximately one acre will be allocated to the CC zone. Future access to the site will likely be provided via a future north leg at the intersection of NE 63rd Street at NE 81st Avenue."
2. "The trip generation calculations show that under the existing R-9 zone, the subject site could reasonably generate up to 79 AM peak hour trips, 105 PM peak hour trips, and 1,050 average weekday trips. Under the proposed R-22 and CC zones, the site could reasonably generate up to 123 AM peak hour trips, 172 PM peak hour trips, and 2,184 average weekday trips. Accordingly, the net change in the trip generation potential of the site after the proposed rezone is projected to increase by 44 AM peak hour trips, 67 PM peak hour trips, and 1,134 average weekday trips."
3. "No significant trends or crash patterns were identified at the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis."
4. "Adequate intersection sight distances are available at the site access approach at the intersection of NE 63rd Street at NE 81st Avenue to allow for safe and efficient operation of the intersection. No mitigation is necessary or recommended at the intersection with respect to intersection sight distance."
5. "Left-turn lane warrants are not projected to be met at the applicable study intersections. Accordingly, no new left-turn lanes are necessary or recommended at any of the study intersections."
6. "Traffic signal warrants are not projected to be met at the unsignalized study intersections under year 2031 conditions with the zone change implemented. Therefore, no new traffic signals are necessary or recommended as part of the proposed comprehensive plan/zone map change application."
7. "All study intersections are currently operating acceptably per City of Vancouver standards and are projected to continue operating acceptably through year 2031, approximately five years beyond an assumed buildout year of the site following approval of the proposed zone change. Accordingly, no operational mitigation is necessary or recommended at the study intersections."

Additionally, this project solves a major issue around intersection spacing along 63rd by moving the access portion of this project to its east boundary directly opposite the intersection that is one of the major direct routes to the south.

Comprehensive Plan Map Amendment Approval Criteria

VMC 20.285.050

The following discusses the criteria that must be addressed for a comprehensive plan and zoning map amendment, and how this proposal complies:

A. Overall proposed map amendments reviewed under this chapter shall be approved only if demonstrated by the proponent to be in the public interest, as based on a review of all applicable principals from the following:

1. How the proposal is more consistent than the existing designation with applicable policies of the Vancouver strategic plan and comprehensive plan.

Response: The request is consistent with Objective 6.2.1 of the Vancouver Strategic Plan: “Develop a broader range of housing choices through incentives, changes in regulations and implementation of the Affordable Housing Task Force recommendations.” The intent of this amendment would be to allow zoning that would increase the overall supply of housing in the city, which would result in lower purchase prices and rental costs. While this does not provide “affordable housing” it goes a long way to make housing more affordable. The applicant has a great deal of experience in townhouse construction and has ideas that can create even more affordable products in the for-sale market. Unfortunately, within the existing codes this would require a condominium development which currently has significant issues due to current laws and insurance issues. In the event that laws change and the project can be converted into condominiums, the site would allow for home ownership at a relatively low price point. Since the adoption of the strategic plan housing prices have continued to soar. This is partly due to a high demand for housing in the Vancouver region that far outpaces the new housing supply. The first step to increasing affordability is to increase supply so that the basic tenants of the Econ 101 supply demand curve can be followed.

2. How the proposal is more consistent than the existing designation with each of the following objectives as applicable:

a. Encourage more intensive development to locate in major urban centers and corridors, particularly downtown Vancouver. Encourage development of distinct neighborhoods served by commercial nodes, and discourage urban sprawl and strip commercial development;

Response: The site is within 0.5 miles of NE Andresen Rd. and approximately 1.5 miles from the nearest access to I-205, both major corridors in the area. Higher density residential development in this area would discourage urban sprawl. NE 63rd Ave is an arterial that crosses I-205 and should be expected to be even more of a corridor as redevelopment happens.

b. Provide development of uses which are functionally integrated with surrounding areas and neighborhoods in terms of local shopping, employment, recreational or other opportunities;

Response: Not applicable, this is a proposal for residential zoned property. The applicant is investigating commercial uses that are appropriate to the area and development and is open to having 5% of the gross floor space being commercial use.

g. Provide for the formation and enhancement of neighborhoods and communities; and

Response: The redevelopment of these parcels will result in an attractive development, with improved public roadways that will be designed to build in with the nearby neighborhood.

h. Provide affordable or below-market-rate housing opportunities.

Response: The proposal does not include affordable or below-market-rate housing, but the increase in housing supply will help make housing more affordable in the area. Apartments are an attractive affordable alternative in today's market. If laws changed at the State of Washington level the applicant would be interested in developing smaller units that would most commonly be sold as a condominium.

3. Scope of review. Review and evaluation of proposed comprehensive plan or zoning map changes shall consider both the likely and possible future use of the site and associated impacts.

Response: The applicant intends to provide typical apartment units within the central portion of the project after the comprehensive plan and zoning map change approval and blend into the neighborhood with 2 story townhouse units along the west side. The request is a change from a lower density to a higher density, however it is still a residential zone so only residences will be proposed. Impacts created would be those of a higher density residential development, with typical impacts to local schools, emergency services and streets. Impact fees will be required to be paid to offset these impacts.

4. Cumulative Impacts. The review of individual comprehensive plan map or policy amendments, other than exceptions noted in VMC [20.285.040](#), shall also consider the cumulative transportation, land supply, and environmental impacts of other plan amendments proposed within the same annual cycle. (Ord. M-3922 § 13, 07/06/2009; Ord. M-3701 § 9, 05/02/2005; Ord. M-3643, 01/26/2004)

Response: The impacts of this development will need to be reviewed in conjunction with the other plan amendments within this review cycle.

ZONING MAP AMENDMENT APPROVAL CRITERIA

VMC 20.285.060.A. sets out the applicable zoning map amendment approval criteria not involving associated comprehensive plan map amendments.

This proposal is required to demonstrate the following:

1. How the proposal is more consistent with applicable policies of the Vancouver strategic plan and comprehensive plan than the existing designation; and
2. That a change in circumstances has occurred since the existing designation was established.

Response: The site is adjacent to Kelley Meadows Park and very near to Green Meadows Golf Course, providing ample recreational opportunities. Vancouver Mall, Costco and Home Depot are nearby providing employment and local shopping opportunities. A higher density residential development would integrate well with these areas. The applicant is also willing to work with the City of Vancouver Parks department on the development and integration of recreation required by the development and advantageous to the Park and the neighborhood.

c. Provide development which is compatible and integrated with surrounding uses in terms of scale, orientation, pedestrian enhancements, and landscaping;

Response: The north end of the site includes a wetland area that will create a buffer between the site and the uses to the north, directly north of that wetland area is Green Meadows Golf Course. To the east is a city park along a majority of the shared property line. At the SE corner there is a single-family residence adjacent to the site. The south end of the site is bounded by NE 63rd Street, a collector arterial. On the west end of the site the applicant is proposing to 2 story townhomes that will blend in better to the neighborhood and will abut the existing private road to the west. This site is well positioned to be developed with a higher intensity use that will not have a significant effect on the existing neighboring uses. The site will have direct access to NE 63rd street and will only be directly adjacent to one single-family home that also has redevelopment potential.

To the SW of the proposed area is an area that was developed under R-18 code while that land was under Clark County jurisdiction.

d. Conserve or enhance significant natural or historical features;

Response: The applicant will retain the existing wetland and buffer areas located on the north end of the site. Additionally, the applicant is willing to work with the City Parks department to move planned park trails out of the wetland area and onto adjoining lands, thus reducing wetland impacts. The applicant has also demonstrated unique design features in the past in an effort to enhance wetland function. If possible, they will seek to duplicate this demonstrated success.

The applicant would also explore solar systems atop parking lot covers as well as on top of southerly facing apartment roofs. The applicant has used innovative hot water systems, lighting, appliances and design elements to reduce energy usage and would use these as well as others to reduce the carbon footprint of this development.

e. Provide adequate provision of transportation, water, sewer, and other public services;

Response: Site access will be provided directly from NE 63rd Street with access across from the existing 81st Ave intersection. A water main is located in NE 63rd Street and CRWWD will be the sanitary sewer purveyor. The site can be served with sanitary sewer with the development of parcel 105210000, and a potential easement from the park property (105240000) as well as a portion of it from sanitary sewer located within NE 63rd Street.

f. Provide significant family wage employment opportunities and broadening of the Vancouver economy;

A. Consistency with Vancouver Strategic Plan

The City adopted a 2016-2021 Strategic Plan, and updated it in November 2018.

The request is consistent with Objective 6.2.1:

6.2.1 Develop a broader range of housing choices through incentives, changes in regulations and implementation of the Affordable Housing Task Force recommendations. Page 23.

In the final 2016 report the Affordable Housing Task Force discussed potential tools and programs to increase the supply of affordable housing units in the city. One of the high priority items discussed was amending zoning/development regulations to encourage affordable housing options.

Option for Council Consideration	Description	Estimated Time for Staff to Develop and Present to Council	City Direct Costs/ Staff Time	Cost to Property Owner/ Developer	Potential to Increase Affordable Units	Considerations and Details Additional information to follow based on Council guidance and staff analysis.	Task Force Priority
EXPAND SUPPLY OF AFFORDABLE HOUSING							
Amend zoning/ development regulations to encourage affordable housing options	- Allow/promote alternative housing, e.g.: - Cluster/cottage housing - Corner-lot duplexes - Micro-housing and single room occupancy (SRO) housing - Shared housing, including rooming/boarding houses - Reduced parking requirements	Medium to Long	\$	\$	Medium	Details: - May be effective at increasing overall supply over a long period of time, but affordability not guaranteed - Marketing incentives/opportunities to property owners and developers - Can use current staff, but may be contracted out Questions: - Requires determination of priorities among several options - Need to determine appropriate level of incentives Task Force comments: Support for allowing a wider variety of housing types and sizes. This option may also provide low-income homeownership unit, an opportunity to address affordable housing apart from rentals.	High

The intent of the option would be to increase the overall supply of housing in the city which would result in lower purchase prices and rental costs. While this does not provide “affordable housing” it goes a long way to make housing more affordable. Since the adoption of the strategic plan housing prices have continued to soar. This is partly due to a high demand for housing in the Vancouver region that far outpaces the new housing supply.

In response to the strategic plan and the Affordable Housing Task Force recommendations, the City Council studied and approved housing code updates. The Housing Code Updates webpage states the following as a purpose of the update:

“Vancouver, like many communities, is facing a housing crisis. As the city continues to grow, there is a desire and need for new types of housing that would allow residents to live more affordably while also maintaining neighborhood livability. However, current city zoning rules prohibit many of these housing options. Changes to the development code can create opportunities for the private sector to deliver a more diverse, affordable housing stock.”

The project goals of the housing update are stated as the following:

“The goal of the project is to update City codes to allow for different, smaller and more affordable types of housing choices. Many are recommended in the Affordable Housing Task Force report (2016) and many are similar to what is allowed in Clark County and other Washington cities nearby and statewide.”

The specific goals include:

- Allowing for the development of diverse housing types to meet changing demographic needs and consumer preferences
- Expanding market rate, middle income, and affordable housing choices
- Maintaining neighborhood livability with incremental, rather than wholesale, change
- Providing more opportunities for people to live near where they work and attend school, and reduce costly commutes
- Facilitating development in areas with full existing public services

The current proposal is consistent with this plan and will help meet the City's goals. The general proposal associated with the zone change will accomplish the following:

- The Wood Ducks Springs Rezone project will add diversity to the housing options in the immediate vicinity of the site.
- The rezone will not have a large effect on adjacent homes as the proposed access is directly from an arterial street.
- The future project would blend into the existing neighborhood as it would place 2 story townhomes on the west side by existing small lots, place apartments within the center and north portions of the project. This would also match the streetscape to the west in the R-18 zones.
- The site is located near schools, stores, and public transport that has the potential to reduce costly commutes.
- The project is in an area with full existing public services.

B. Consistency with the Comprehensive Plan

The applicant is requesting a concurrent change in the Comprehensive Plan designation. The current and proposed plan designations are residential and are compatible. The proposed plan results in a higher density but can be designed to have less of an impact on the neighboring lower density community.

Table 1-5. Vancouver comprehensive plan land use designations

Comprehensive Plan designation	Corresponding Zoning	General Intent
Residential		
Urban Lower Density	R-2, R-4, R-6, R-9	Predominantly single-family detached residential development, with some allowances for duplexes, townhouses, and single-family homes on small lots using infill standards
Urban Higher Density	R-18, R-22, R-30, R-35, MX	Predominantly apartments and condominiums, with some allowance for attached housing (such as duplexes, townhouses, and small-lot single-family homes) and mixed use

This request furthers the Community Development policies on page 1-14 to 1-15 of the Comprehensive Plan:

CD-2 Efficient development patterns Encourage efficient development throughout Vancouver to ensure achievement of average density of 8 units per acre set by countywide planning policies. Encourage higher density and more intense development in areas that are more extensively served by facilities, particularly transportation and transit services.

Response:

- The site is near a full-service grocery store/commercial area, elementary school, community park, and C-Tran Bus route 78 on NE Andresen Rd.

- Safeway and Walgreens are both approximately 1/4 mile from the site. This is approximately a 5-minute walk. There is also a Starbucks (inside Safeway), Chase Bank, State Farm Insurance, The UPS Store, Sprint Store, Great Clips, Nail Salon, Drive through Coffee, and Subway.
- Walnut Grove Elementary is south of the site.
- Raymond E Shaffer Community Park is located approximately 1/4 mile to the southeast. This is a 10-acre park that connects to another 7-acre park to the south.
- C-Tran Bus route 78 stops at NE Andresen Rd and NE 63rd Street. This is less than a 1/2 mile from the site.
 - The northbound and southbound busses arrive every 30 min from 6:00am to 9:00am and 3:00pm to 6pm
 - The northbound and southbound busses arrive every 60 min from 9:00am to 3:00pm and 6:00pm to 10pm

CD-3 Infill and redevelopment- Where compatible with surrounding uses, efficiently use urban land by facilitating infill of undeveloped properties, and redevelopment of underutilized and developed properties. Allow for conversion of single to multi-family housing where designed to be compatible with surrounding uses.

Response:

- The proposal includes converting existing underutilized land into an apartment housing project.

In addition, the request fulfills both CD-9, facilitating compatible uses adjacent to each other, and CD-10, placing housing near services (complementary land uses).

Chapter 3 of the Comprehensive Plan contains the City's Housing element. The Plan recognizes the need for diverse housing:

As the baby boom generation ages over the next 20 years, there is likely to be a greater need and demand for smaller units, retirement homes, and assisted living.
Page 3-3.

The plan notes that most residential housing is single-family housing (57%). *Id.* Housing affordability is also a City concern:

The Growth Management Act requires local jurisdictions to demonstrate that regulations allow and encourage housing for all economic segments of the community. Table 3-3 provides a breakdown of local households by income ranges, and the general share of Vancouver housing they can afford to buy or rent without having to spend more than 30% of their income.

There are several policies that would be furthered by this request, including:

H-1 Housing options

Provide for a range of housing types and densities for all economic segments of the population. Encourage equal and fair access to housing for renters and homeowners.

H-2 Affordability

Provide affordable housing by formulating innovative policies, regulations and practices, and establishing secure funding mechanisms. Target affordability programs toward households with incomes below the median.

C. Change in Circumstances

The proposed zone change is in response to the current housing shortage and affordability crisis that is currently occurring in SW Washington. This shortage of housing within the area that the subject property lies represents a change in conditions or circumstances since the zoning designation was established. The proposed zone change will result in additional housing units that will increase the housing supply in the area and contribute to improving housing affordability.

According to the 2016 Affordable Housing Task Force Report issued by the City of Vancouver, it was noted that:

Vancouver, Washington and the surrounding communities are experiencing an unprecedented demand for rental units. In June 2015, the vacancy rate in Vancouver was just below 2%, down from 3.8% at the end of 2010.¹ The tightening market has led to a dramatic increase in rents. Between October 2014 and October 2015, the increase in median rent for a 2-bedroom, 1-bath unit in Vancouver was the highest in the nation at 15.6% (a jump from \$900 to \$1,040 per month). Page 2.

While this report was issued in 2016, conditions have not improved in recent years. This report recognizes that higher densities can promote more affordable housing.

CONCLUSION

Approval of this application would result in a development that can be served by existing urban public services and will provide more flexibility in density and housing types, resulting in more affordable housing.

Attachment B – Comments Received

From: Steven Holt <stholt@andersen-const.com>
Sent: Tuesday, October 31, 2023 1:08 PM
To: Snodgrass, Bryan <Bryan.Snodgrass@cityofvancouver.us>
Cc: mori.ronae@gmail.com
Subject: Concerned Citizen In the Walnut Grove Area

You don't often get email from stholt@andersen-const.com. [Learn why this is important](#)

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning, Mr. Snodgrass,

It was brought to my attention by my neighbor Eric that there are plans in the works to add 224 multi-family units to the area. I understand the city is growing and developing, and I can relate to and even appreciate the booming construction industry that is currently transforming our cities. I am a direct beneficiary of this industry as a project engineer for Andersen Construction Company, and I also come from the trades. However, I am extremely concerned about the direct and immediate impact that many units will have on the traffic flow in front of my house on 84th Avenue from 63rd to 58th Street. This is directly in front of my home, and I observe people break the law daily by speeding through our neighborhood because it's a shortcut to the freeway and expressway. I have three brilliant, talented, and gifted young children (13, 9, & 8) who play with the other kids in the neighborhood and they all cross this street daily. Although a stop sign was installed, they were placed in the wrong locations, and they do little to nothing to help ensure the safety of all the young children or special needs children. Are there going to be any additional speed control measures put in place to help with the sudden influx of traffic in this area? Lastly, there are speed bumps on 87th Avenue from 63rd to 58th Street so vehicles avoid driving that road due to the traffic control measures.

Warmly,

Steven Holt Jr
PROJECT ENGINEER 2



lancaster
mobley



11/12/2023

Wood Duck Springs Comprehensive Plan / Zone Map Change

Transportation Impact Study

Vancouver, Washington

Date:

November 12, 2023

Prepared for:

Nick Zodrow

Songbird Holding LLC

Prepared by:

Daniel Stumpf, PE

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Executive Summary

1. The proposed Wood Duck Springs Comprehensive Plan Amendment/Zone Change project will include the rezone of six properties located at/near 8208 NE 63rd Street in Vancouver, Washington. The proposal will rezone the properties from Urban Low Density (R-9) to Urban High Density (R-22) and Community Commercial (CC), where approximately one acre will be allocated to the CC zone. Future access to the site will likely be provided via a future north leg at the intersection of NE 63rd Street at NE 81st Avenue.
2. The trip generation calculations show that under the existing R-9 zone, the subject site could reasonably generate up to 79 AM peak hour trips, 105 PM peak hour trips, and 1,050 average weekday trips. Under the proposed R-22 and CC zones, the site could reasonably generate up to 123 AM peak hour trips, 172 PM peak hour trips, and 2,184 average weekday trips. Accordingly, the net change in the trip generation potential of the site after the proposed rezone is projected to increase by 44 AM peak hour trips, 67 PM peak hour trips, and 1,134 average weekday trips.
3. No significant trends or crash patterns were identified at the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.
4. Adequate intersection sight distances are available at the site access approach at the intersection of NE 63rd Street at NE 81st Avenue to allow for safe and efficient operation of the intersection. No mitigation is necessary or recommended at the intersection with respect to intersection sight distance.
5. Left turn lane warrants are projected to be met at the eastbound approach at the intersection of NE 63rd Street at NE 81st Avenue under year 2026 conditions with the proposed zone change implemented. To accommodate this left-turn lane the existing median on the west intersection leg can be re-stripped accordingly. Left-turn lane warrants are not projected to be met at any of the other study intersections. No other new left-turn lanes are necessary or recommended at these study intersections.
6. Traffic signal warrants are not projected to be met at the unsignalized study intersections under year 2031 conditions with the zone change implemented. Therefore, no new traffic signals are necessary or recommended as part of the proposed comprehensive plan/zone map change application.
7. All study intersections are currently operating acceptably per City of Vancouver standards and are projected to continue operating acceptably through year 2031, approximately five years beyond an assumed buildout year of the site following approval of the proposed zone change. Accordingly, no operational mitigation is necessary or recommended at the study intersections.



Project Description

Introduction

The proposed Wood Duck Springs Comprehensive Plan Amendment/Zone Change project will include the rezone of six properties located at/near 8208 NE 63rd Street in Vancouver, Washington. The proposal will rezone the properties from Urban Low Density (R-9) to Urban High Density (R-22) and Community Commercial (CC), where approximately one acre will be allocated to the CC zone. Future access to the site will likely be provided via a future north leg at the intersection of NE 63rd Street at NE 81st Avenue.

Based on correspondence with City of Vancouver staff, the report conducts safety and capacity/level of service analyses at the following intersections:

1. NE 63rd Street at NE Andresen Road
2. NE 63rd Street at NE 72nd Avenue
3. NE 63rd Street at NE 81st Avenue (Site Access)
4. NE 58th Street at NE 81st Avenue
5. NE 58th Street at NE 82nd Avenue

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting existing uses and potential on-site development following approval of the zone change, and to determine any mitigation that may be necessary to do so. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

Location Description

The project site is located north of NE 63rd Street, east of NE 78th Avenue and west of NE 84th Place in Vancouver, Washington. The subject site consists of six properties (assessor parcels 105241000, 105242000, 105190005, 105190010, 105190000, and 986042813) which encompass an approximate total of 13.8 acres. The site is located within a predominately residential area of the City, with a mix of residential uses and undeveloped land surrounding the site in all directions. One notable development near the project site is Vancouver Mall, located approximately a half mile to the south of the site.

Figure 1 presents an aerial image of the nearby vicinity with the project site outlined in yellow.

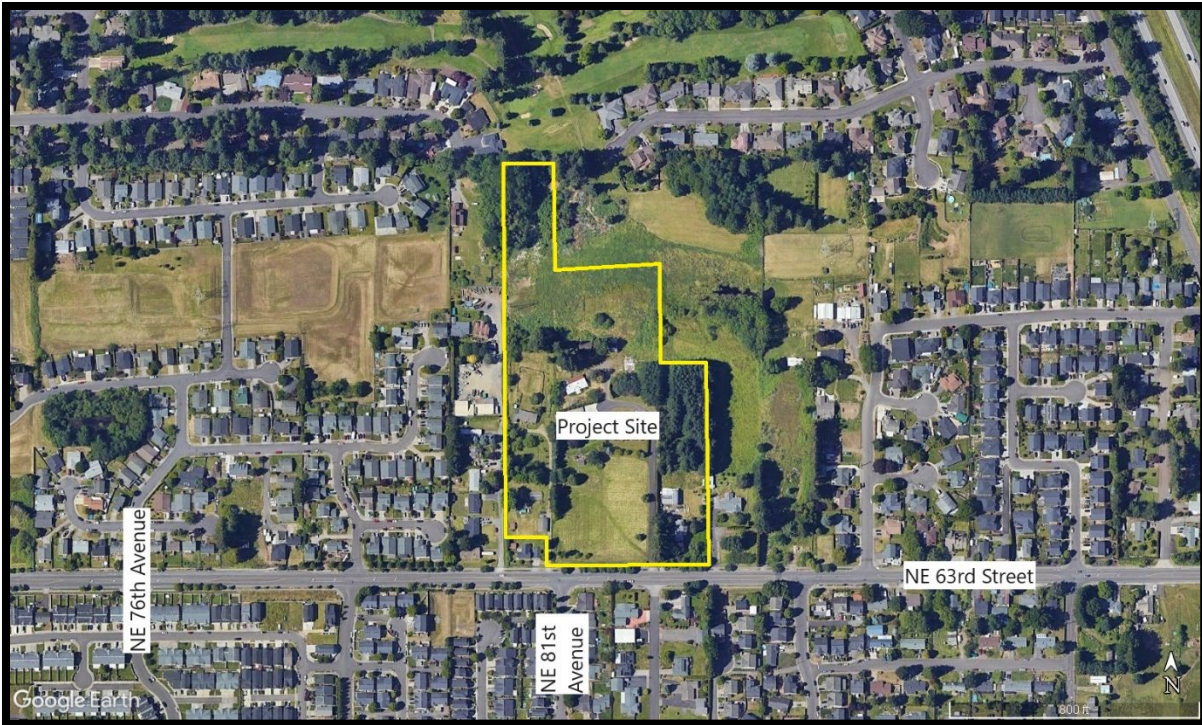


Figure 1: Aerial Photo of Site Vicinity (Image from Google Earth)

Vicinity Streets

The study intersections are composed of six roadways. Table 1 provides a description of these vicinity roadways.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Speed (MPH)	On-Street Parking	Curbs & Sidewalks	Bicycle Lanes
NE 63rd Street	Vancouver/ Clark County	Collector/Minor Arterial	35/40	Not Permitted	Partial Both Sides	Both Sides
NE 58th Street	Vancouver/ Clark County	Collector Arterial	25/30	Partially Permitted	Partial Both Sides	None
NE Andresen Road	Vancouver	Principal Arterial	40	Not Permitted	Both Sides	Partial Both Sides
NE 72nd Avenue	Vancouver	Collector Arterial	30	Partially Permitted	Partial Both Sides	Partial Both Sides
NE 81st Avenue	Vancouver	Collector Arterial	25	Permitted	Both Sides	None
NE 82nd Avenue	Vancouver	Collector/Minor Arterial	25	Partially Permitted	Both Sides	Partial Both Sides

Table Notes: Functional classification based on Vancouver Arterial Street System and Classification map.

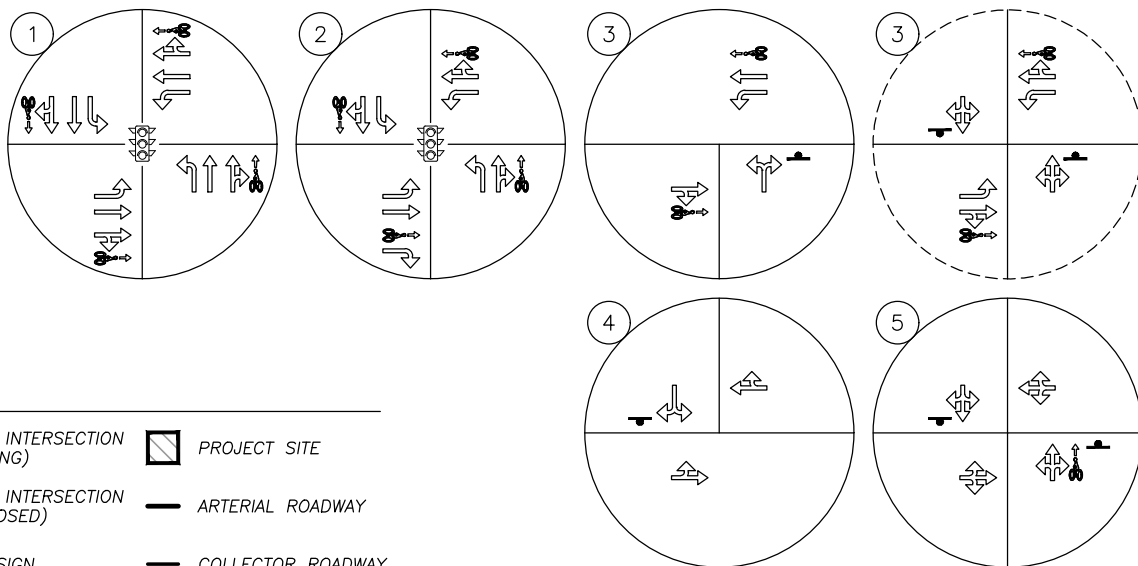
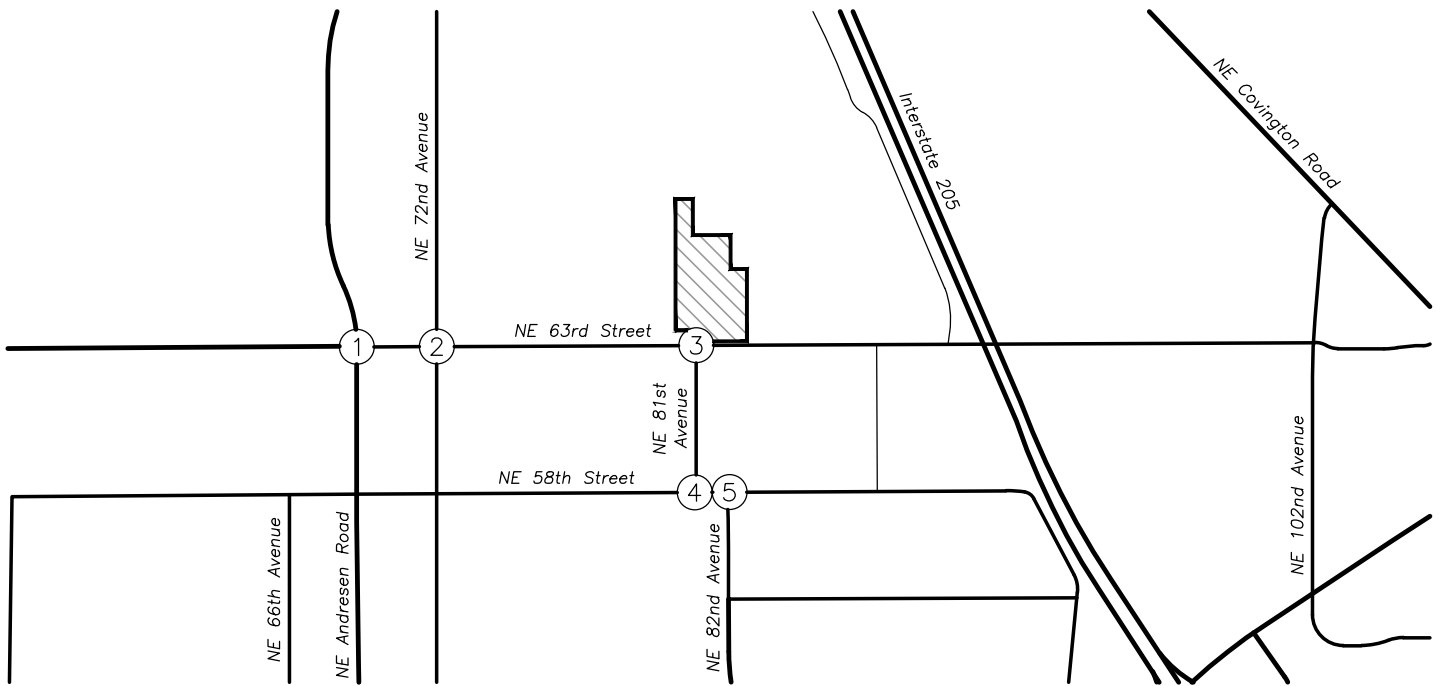
Study Intersections

At the request of the City of Vancouver, an analysis of five nearby intersections is required as part of the zone change analysis. A summarized description of these study intersections is provided in Table 2.

Table 2: Study Intersection Description

Number	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	NE 63rd Street at NE Andresen Road	Four-Legged	Traffic Signal	Protected NB/SB/EB/WB Left-turns, Overlap EB Right turn
2	NE 63rd Street at NE 72nd Avenue	Four-Legged	Traffic Signal	Permitted NB/SB Left-turns, Permitted/Protected EB/WB Left-turns
3	NE 63rd Street at NE 81st Avenue	Three-Legged	Stop-Controlled	Stop-Controlled NB Approach
4	NE 58th Street at NE 81st Avenue	Three-Legged	Stop-Controlled	Stop-Controlled SB Approach
5	NE 58th Street at NE 82nd Avenue	Four-Legged	Stop-Controlled	Stop-Controlled NB/SB Approaches

A vicinity map showing the project site, vicinity streets, and study intersection configuration are shown in Figure 2.



LEGEND

- | | | | |
|--|-------------------------------|--|-------------------|
| | STUDY INTERSECTION (EXISTING) | | PROJECT SITE |
| | STUDY INTERSECTION (PROPOSED) | | ARTERIAL ROADWAY |
| | STOP SIGN | | COLLECTOR ROADWAY |
| | TRAFFIC SIGNAL | | LOCAL ROADWAY |
| | BIKE LANE | | |



no scale

Site Trips

Trip Generation

The subject site is currently zoned as R-9 and is proposed for a change in zoning to R-22 and CC, where approximately one acre will be allocated to the CC zone. To determine the potential impacts of the proposed zone change, reasonable “worst-case” development scenarios for the existing and proposed zones were determined utilizing data for the most traffic-intensive uses permitted within each zone.

Existing R-9 Zoning

To determine a reasonable “worst-case” development scenario under the existing R-9 zone, Vancouver Municipal Code (VMC) section 20.410 *Commercial and Mixed-Use Districts* was referenced and compared to a variety of land uses provided within the *Trip Generation Manual*¹. Based on an assessment of permitted uses under the R-9 zone, data from land use code 210, *Single-Family Detached Housing*, was used to estimate the existing trip generation potential of the site based on number of dwelling units. Note the City of Vancouver utilizes alternative trip generation rates for land use code 210 which slightly vary from the 11th Edition of the *Trip Generation Manual*.

To determine a reasonable maximum dwelling unit count that could be developed within the site, the maximum unit per net acre density rate was referenced from VMC 20.410.040, where an R-9 zone has a maximum 8.7 units per net acre of developable space. To determine a net acre area of developable space on the site, it is assumed that a reasonable, if not conservative, 20% reduction in site buildable area will be necessary to accommodate streets/right-of-way improvements, public space, etc. The project site encompasses approximately 13.8 acres. Based on correspondence with the applicant’s team approximately 12.0 net developable acres was considered for analysis, resulting in a reasonable “worst-case” development scenario of up to 105 single-family houses.

Proposed R-22 and CC Zoning

To determine a reasonable “worst-case” development scenario under the proposed R-22 and CC zones, VMC sections 20.420 *Higher Density Residential Districts* and 20.430 *Commercial and Mixed Use Districts* were referenced. Based on an assessment of permitted uses under the R-22 and CC zones and evaluating what could reasonably be developed on-site, data from the following land use codes were used to estimate the proposed trip generation potential of the site:

- 220, *Multifamily Housing (Low-Rise)*, based on number of dwelling units.
- 492, *Health/Fitness Club*, based on the square footage of the gross building floor area.

To determine a dwelling unit count within the proposed R-22 zone, the maximum unit per acre density rate from City code was referenced from VMC 20.420.040, where an R-22 zone allows for a maximum 22 units per acre of developable space. For the CC zone and referring to VMC 20.430.040, no specific minimum floor-to-area (FAR) ratio or building coverage standards are provided. The R-22 zone will encompass approximately 12.86 acres while the remaining site area will be applied to the CC zone. Based on these assumptions the

¹ Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

reasonable “worst-case” development scenario may include the development of up to 283 multifamily dwellings and an approximate 8,000 square foot gym/fitness center.

Analysis Results

The trip generation calculations show that under the existing R-9 zone, the subject site could reasonably generate up to 79 AM peak hour trips, 105 PM peak hour trips, and 1,050 average weekday trips. Under the proposed R-22 and CC zones, the site could reasonably generate up to 123 AM peak hour trips, 172 PM peak hour trips, and 2,184 average weekday trips. Accordingly, the net change in the trip generation potential of the site after the proposed rezone is projected to increase by 44 AM peak hour trips, 67 PM peak hour trips, and 1,134 average weekday trips.

The trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included in the technical appendix.

Table 3: Proposed Zone Change Trip Generation Summary

ITE Code		Size	AM Peak Hour			PM Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Existing R-9 Zone									
Single-Family Detached Housing	210	105 units	20	59	79	66	39	105	1,050
Proposed R-22 and CC Zones									
Multifamily Housing (Low-Rise)	220	283 units	27	86	113	91	53	144	1,908
Heath/Fitness Club	492	8,000 SF	5	5	10	16	12	28	276
Total Trips			32	91	123	107	65	172	2,184
Net Change In Site Trip Generation Potential									
Net Increase			12	32	44	41	26	67	1,134

Trip Distribution

The trip distribution for the project site was derived using the Southwest Washington Regional Transportation Council (RTC) transportation system model. The project site is located in Transportation Analysis Zone (TAZ) #1861, for which a select zone analysis was run to determine the distribution of site trips entering and exiting the zone.

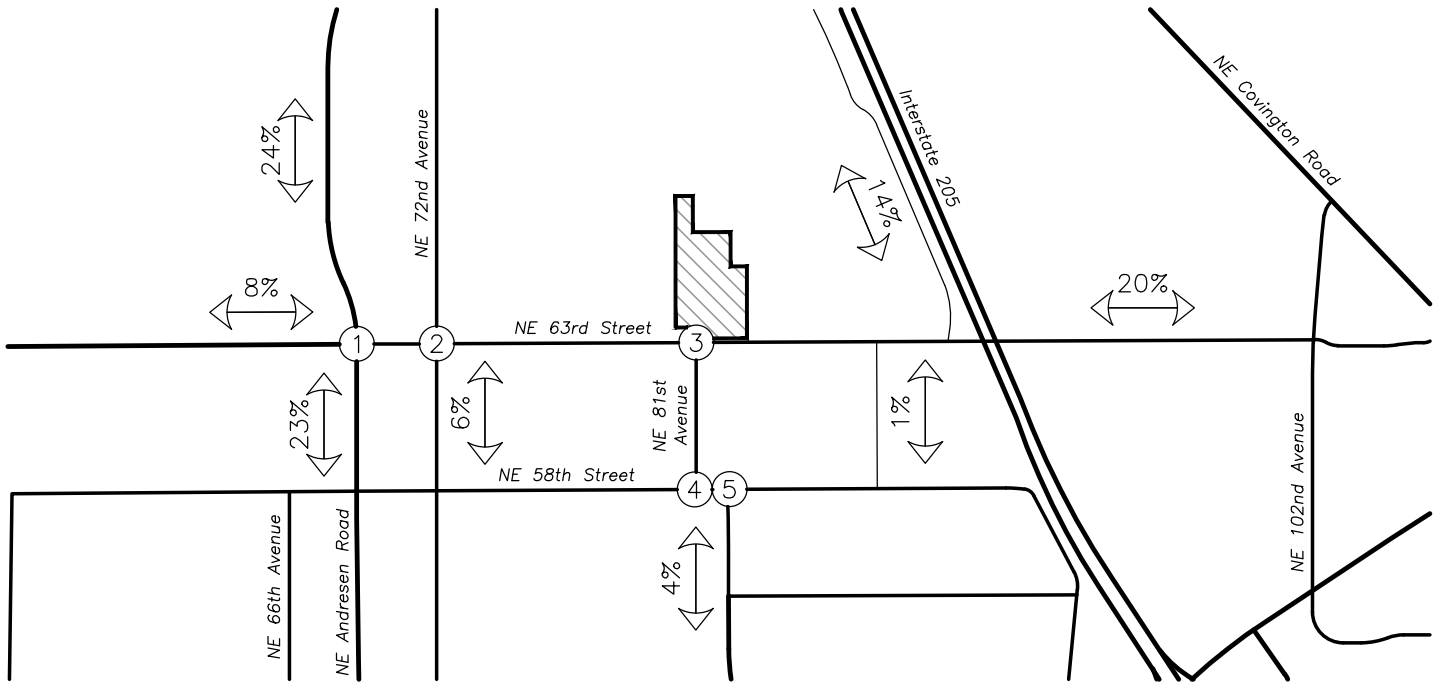


Using information from the RTC model, the following trip distribution is projected within the immediate site vicinity:

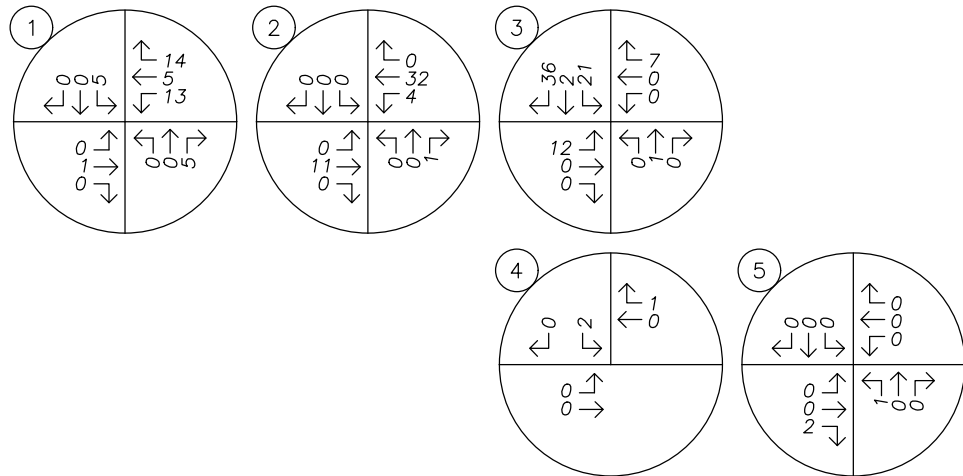
- Approximately 24% of site trips will travel to/from the north along NE Andresen Road, north of NE 63rd Street.
- Approximately 23% of site trips will travel to/from the south along NE Andresen Road, south of NE 63rd Street.
- Approximately 20% of site trips will travel to/from the east along NE 63rd Street, east of NE Meadows Drive.
- Approximately 14% of site trips will travel to/from the north along NE Meadows Drive, north of NE 63rd Street.
- Approximately 8% of site trips will travel to/from the west along NE 63rd Street, west of NE Andresen Road.
- Approximately 6% of site trips will travel to/from the south along NE 72nd Avenue, south of NE 63rd Street.
- Approximately 4% of site trips will travel to/from the south along NE 81st Avenue, south of NE 63rd Street.
- Approximately 1% of site trips will travel to/from the south along NE 87th Avenue, south of NE 63rd Street.

The trip distribution and assignment for the site trips generated during the AM and PM peak hours are shown in Figure 3 and Figure 4 for the existing and proposed zone scenarios, respectively.

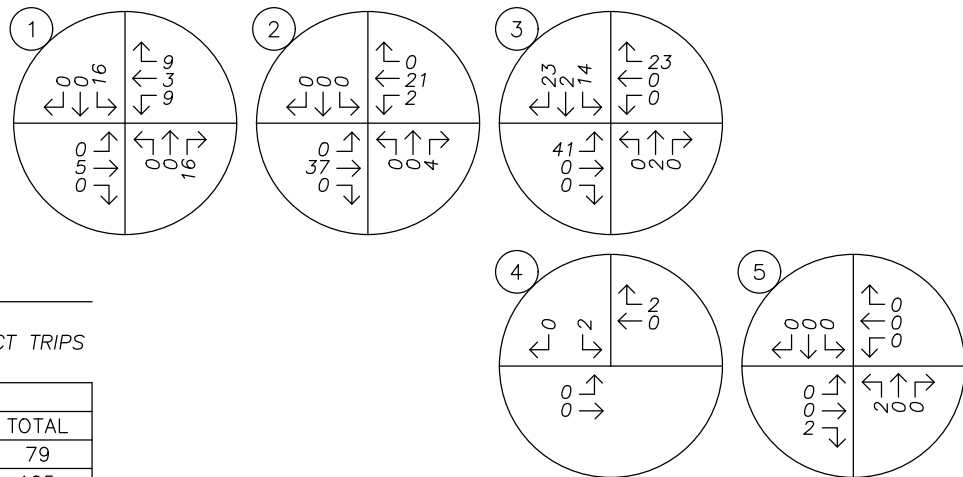




AM PEAK HOUR



PM PEAK HOUR



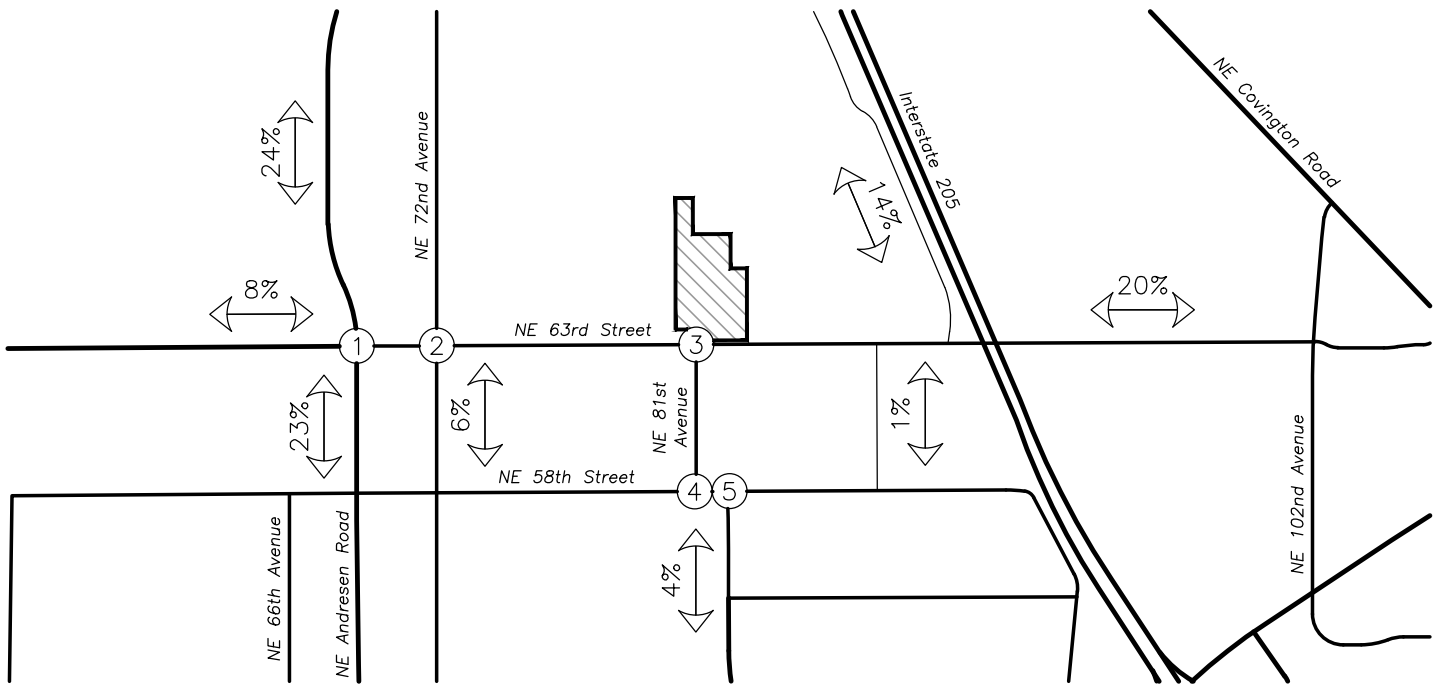
LEGEND

XX% PERCENT OF PROJECT TRIPS

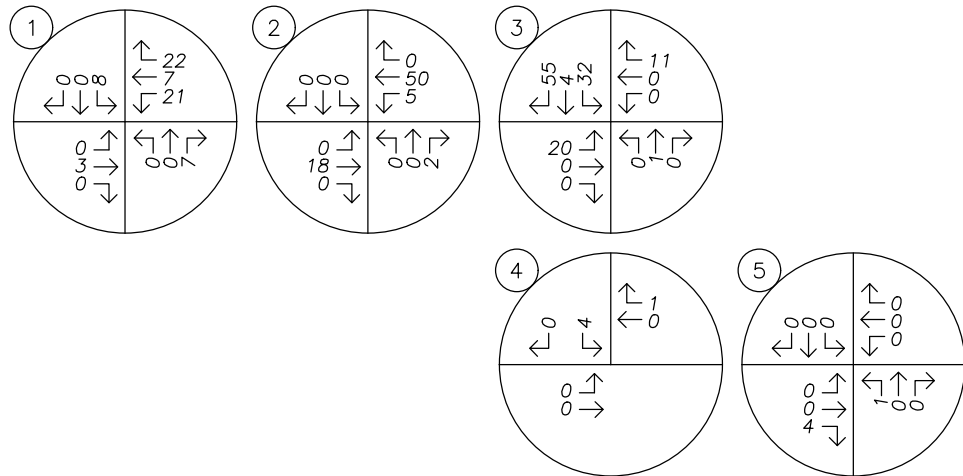
NET TRIP GENERATION			
	IN	OUT	TOTAL
AM	20	59	79
PM	66	39	105



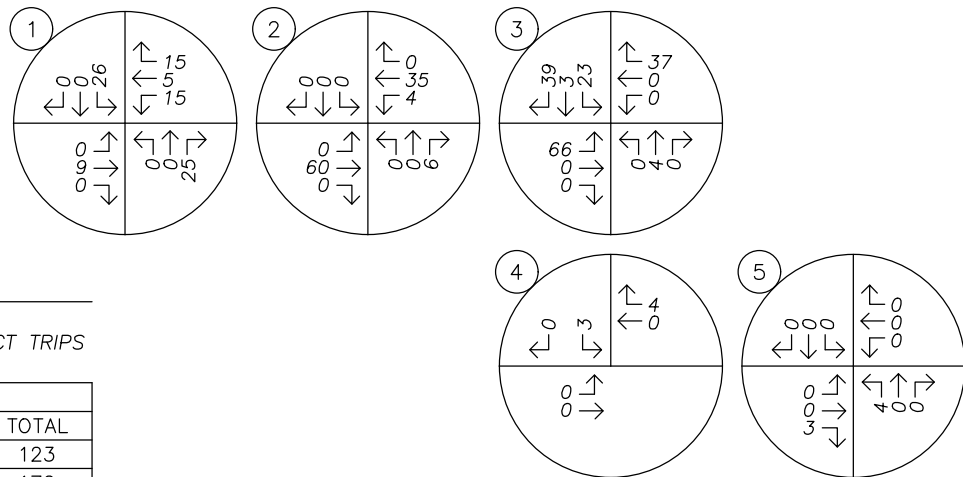
no scale



AM PEAK HOUR



PM PEAK HOUR



LEGEND

XX% PERCENT OF PROJECT TRIPS

NET TRIP GENERATION			
	IN	OUT	TOTAL
AM	32	91	123
PM	107	65	172



no scale

Traffic Volumes

2023 Existing Conditions

Traffic counts were conducted at the study intersections on Thursday, September 21, 2023, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Data was used from each intersection's respective AM and PM peak hours.

Figure 4 shows the year 2023 existing traffic volumes at the study intersections during the AM and PM peak hours.

2026 Background Conditions

Volume Growth

To provide an analysis of the potential impact of the proposed zone change on the nearby transportation facilities, an estimate of future traffic volumes is required. In order to approximate the future year 2026 traffic volumes at the study intersections, the estimated year of when the project site may redevelop as a higher intensive trip generating use, a compounded growth rate of 1.5% per year was applied to the 2023 existing traffic volumes in accordance with the City of Vancouver's Traffic Study Guidelines, dated September 2021. The growth rate was applied to the existing counts over a three-year period, assuming a 2026 site buildout year.

In-Process Data

In addition to the traffic volume growth described above, there are several in-process developments that are currently approved/proposed for construction within the site vicinity that are expected to impact nearby study intersections. These in-process developments include the following:

1. Park Meadow Subdivision
2. 66th Avenue Cottages
3. NE 62nd Street Apartments
4. NE 63rd Street Storage Facility
5. NE 63rd Street Infill Subdivision
6. Velendo Industrial Park

The in-process developments are not currently/fully contributing trips to the transportation system but may potentially be by the assumed 2026 buildout year of the site. Additional trips corresponding to each in-process development were added to the existing year traffic volumes in addition to the three years of traffic growth at each of the applicable study intersections. To maintain a conservative analysis of operation at the study intersections, all in-process developments were assumed to be constructed by year 2026. Figure A in the technical appendix shows the in-process development trips at the study intersections during the AM and PM peak hours.

Figure 5 shows the projected year 2026 background traffic volumes at the study intersections during the AM and PM peak hours.

2026 Background Conditions with Zone Change

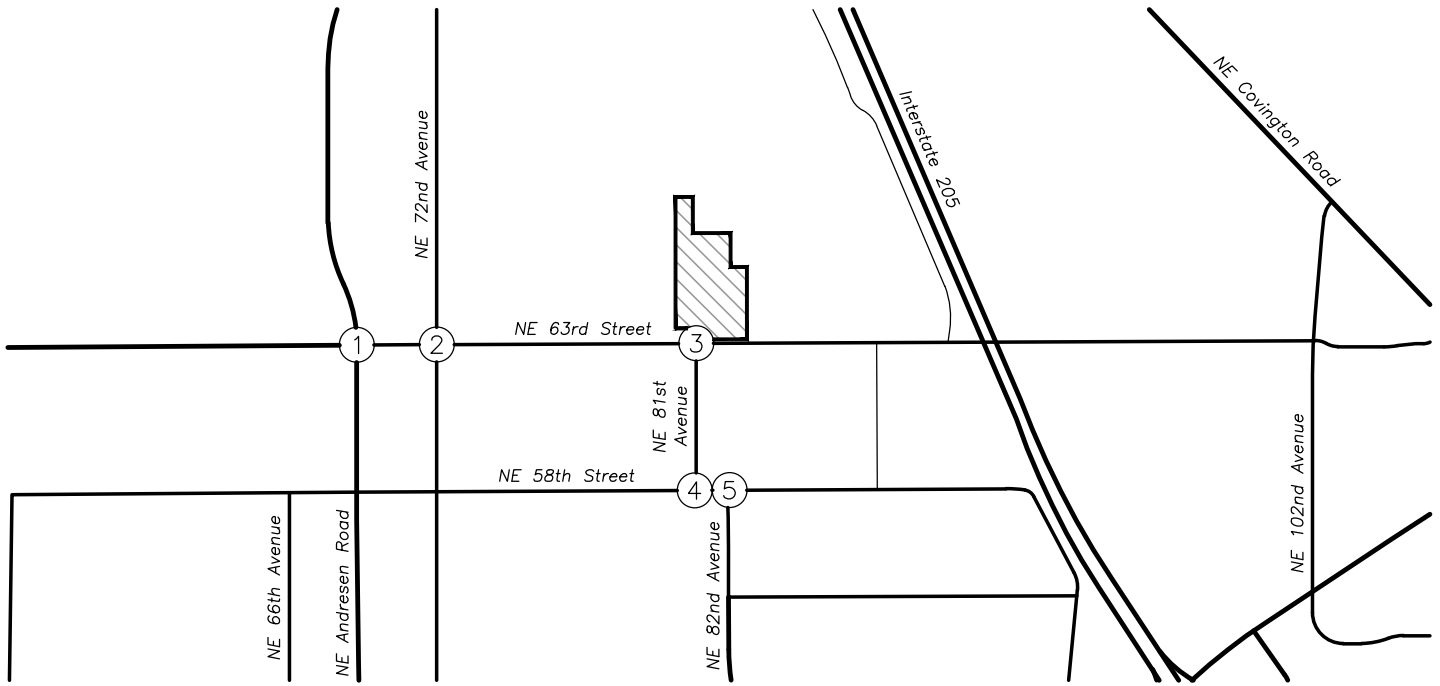
The net change in peak hour trips calculated to be potentially generated as a result of the proposed zone change, as described earlier within the *Site Trips* section, were added to the projected year 2026 background traffic volumes to obtain the expected year 2026 site buildout volumes.

Figure 7 and Figure 8 show the year 2026 background traffic volumes at the study intersections under the existing and proposed zones, respectively, during the AM and PM peak hours.

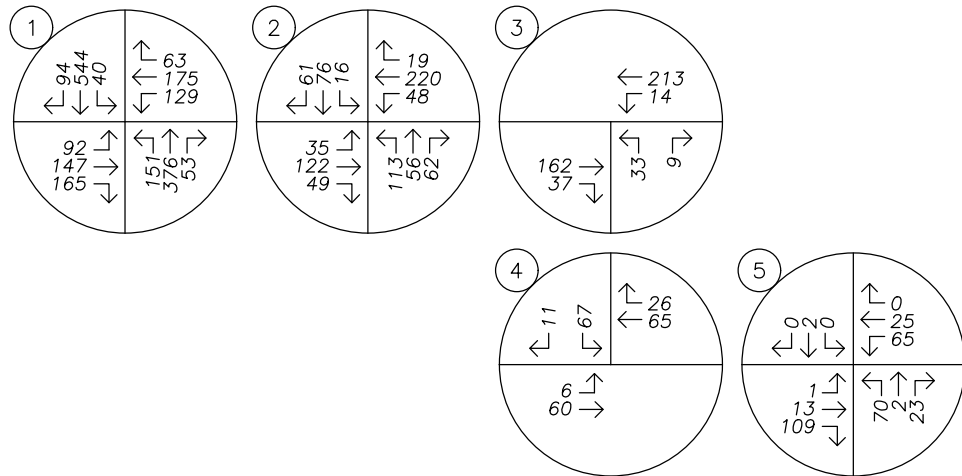
2031 Future Conditions with Zone Change

Per the City of Vancouver's Traffic Study Guidelines, an additional future year analysis scenario was prepared which reviews traffic conditions five years beyond the assumed 2026 buildout year of the site. The traffic volumes were estimated in a manner consistent with the methodologies discussed in the aforementioned sections, with the exception that growth rates were applied to the existing year traffic volumes over an eight-year period to estimate 2031 traffic conditions.

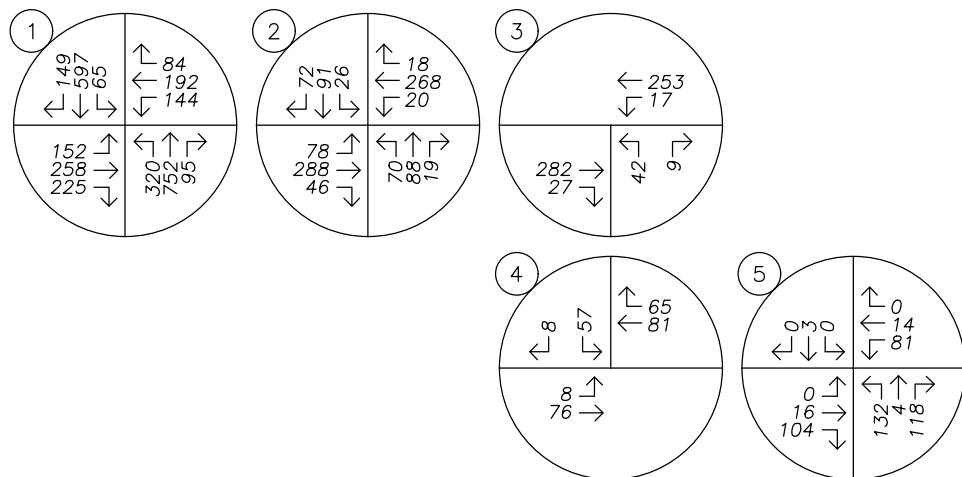
Figure 9 and Figure 10 show the year 2031 future traffic volumes at the study intersections under the existing and proposed zones, respectively, during the AM and PM peak hours.



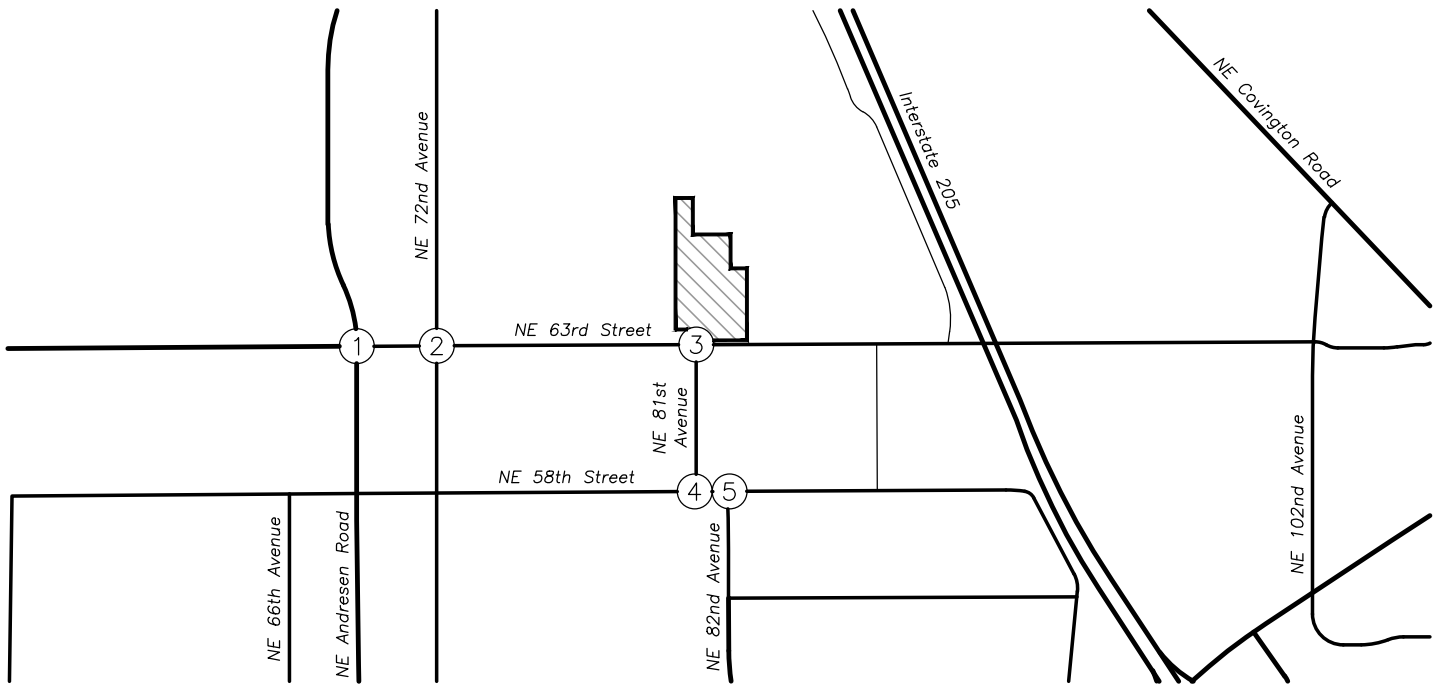
AM PEAK HOUR



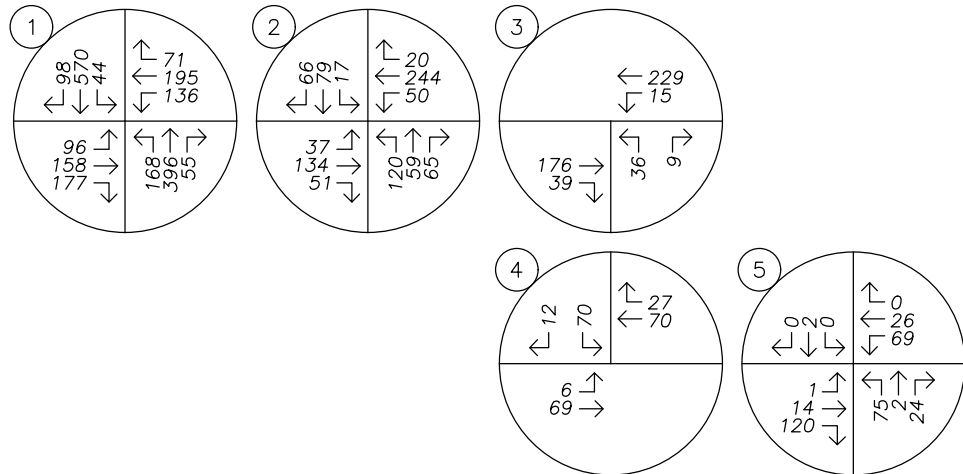
PM PEAK HOUR



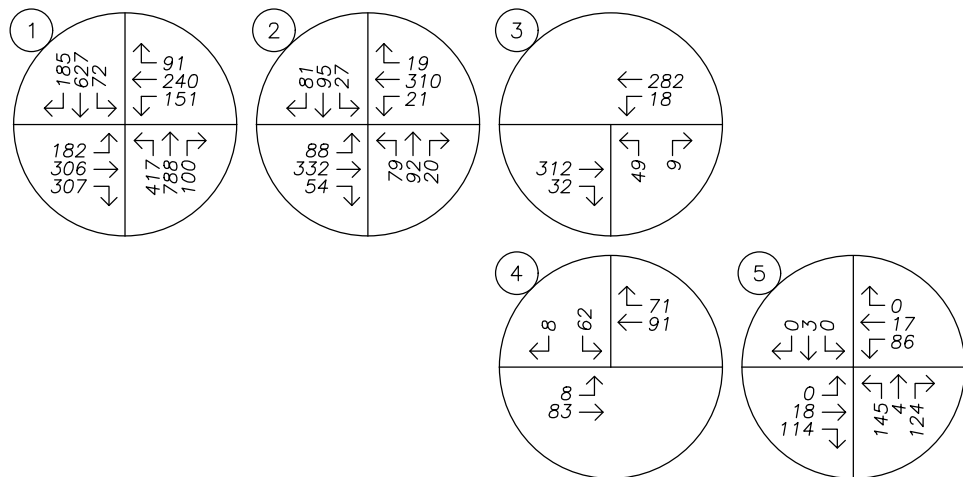
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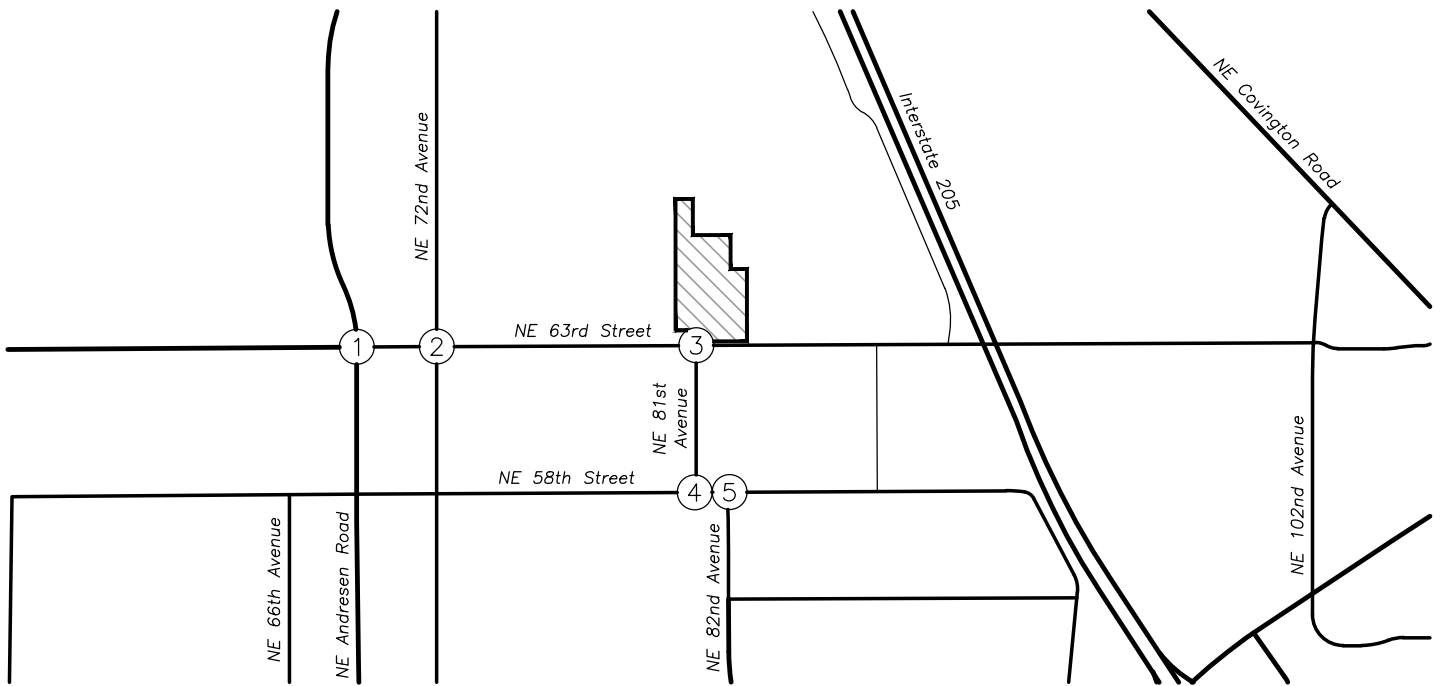
AM PEAK HOUR



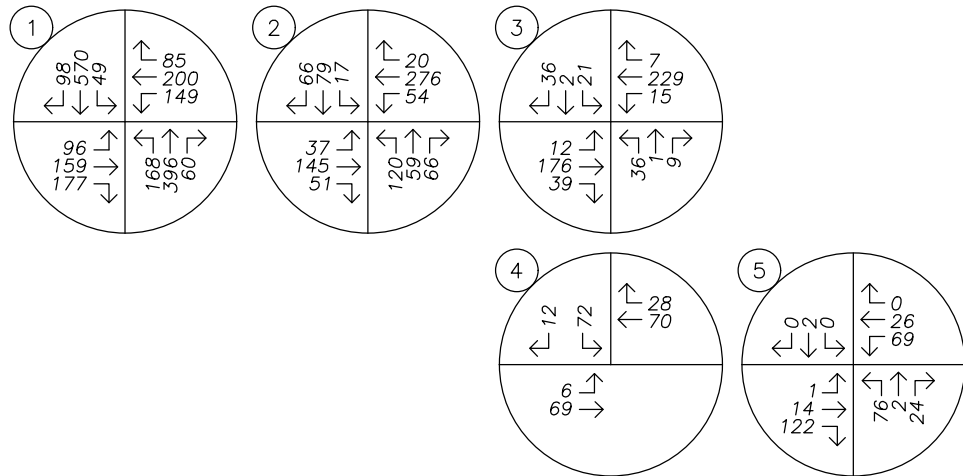
PM PEAK HOUR



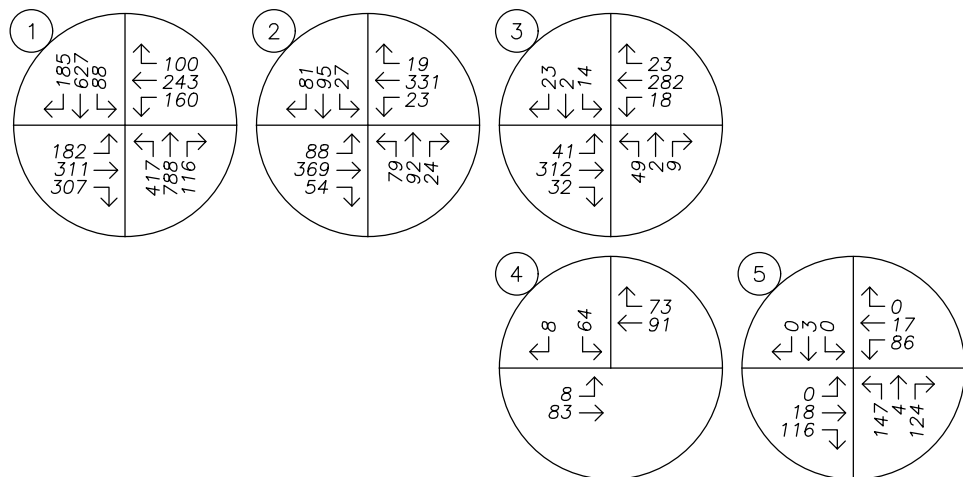
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AM PEAK HOUR



PM PEAK HOUR



no scale

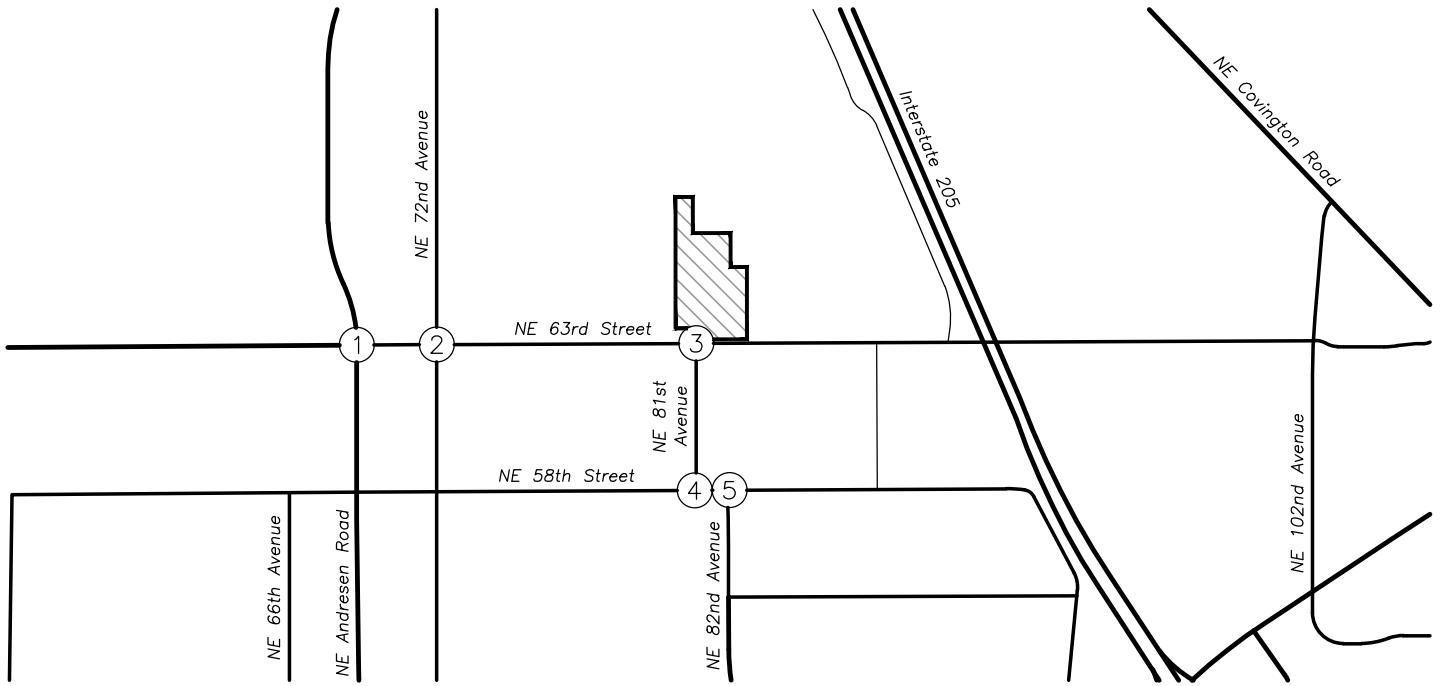
TRAFFIC VOLUMES

Year 2026 Background Conditions with Existing Zone
AM & PM Peak Hours

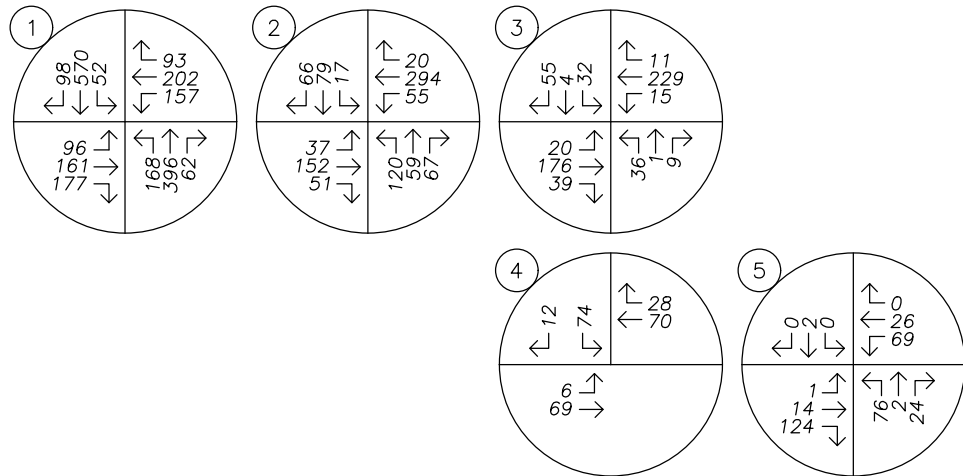
Figure 7

Wood Duck Springs CPA/ZC

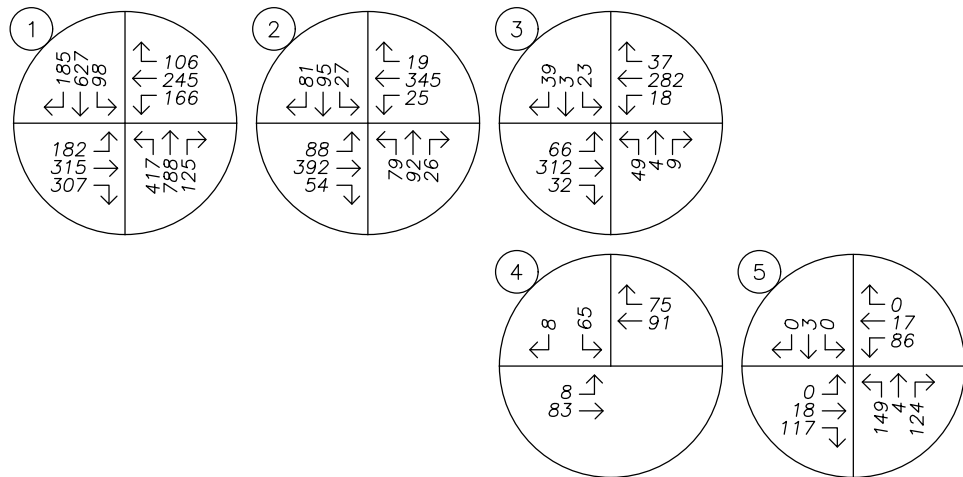
11/12/2023



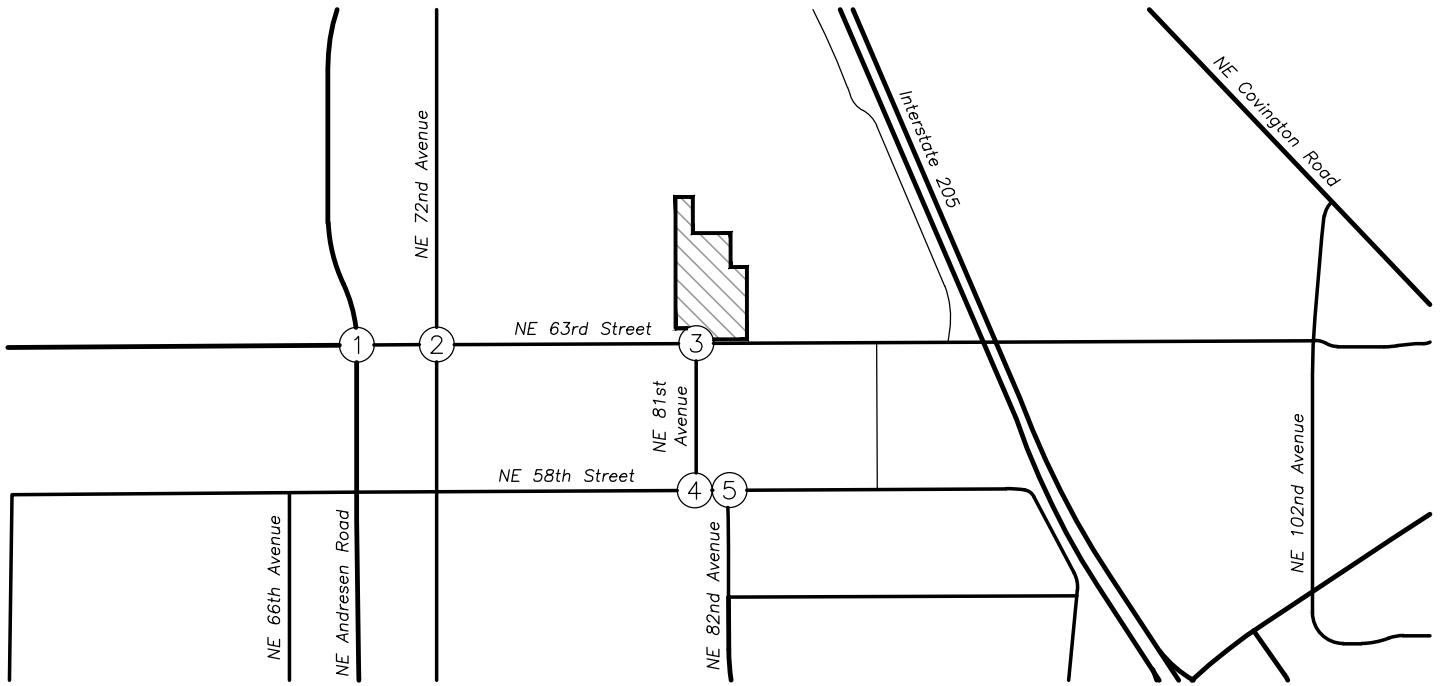
AM PEAK HOUR



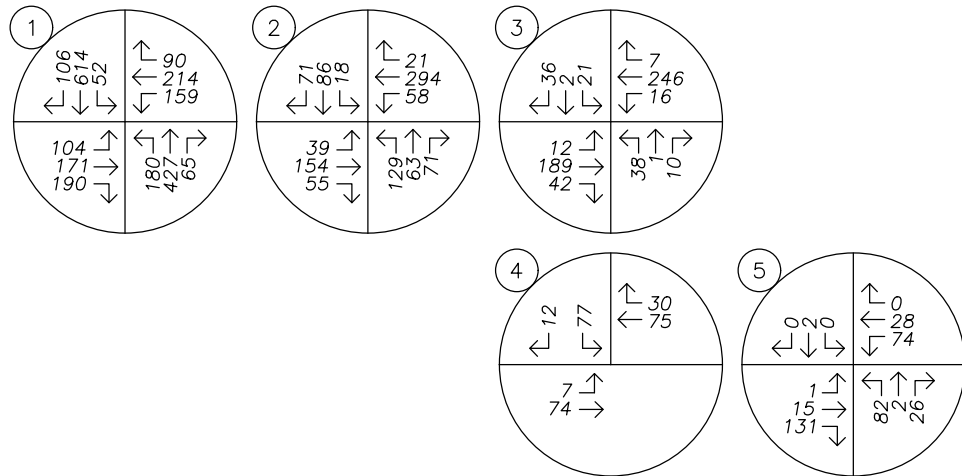
PM PEAK HOUR



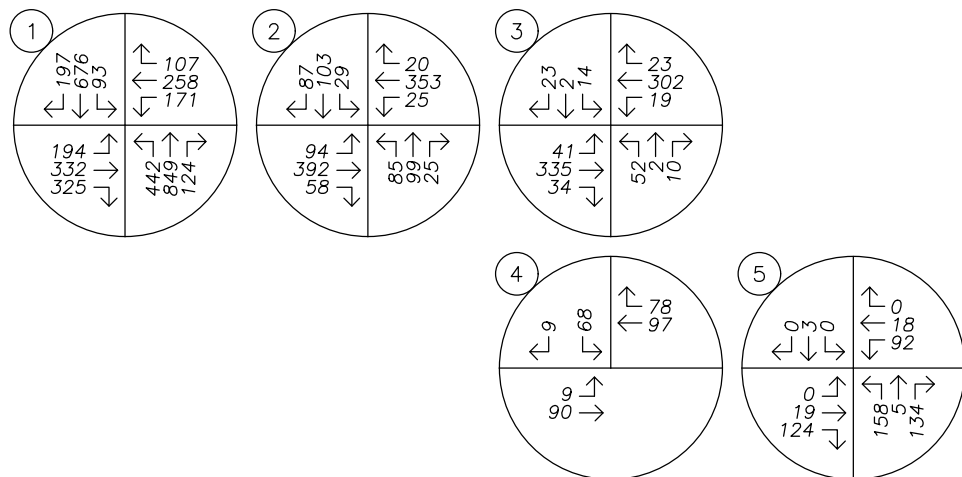
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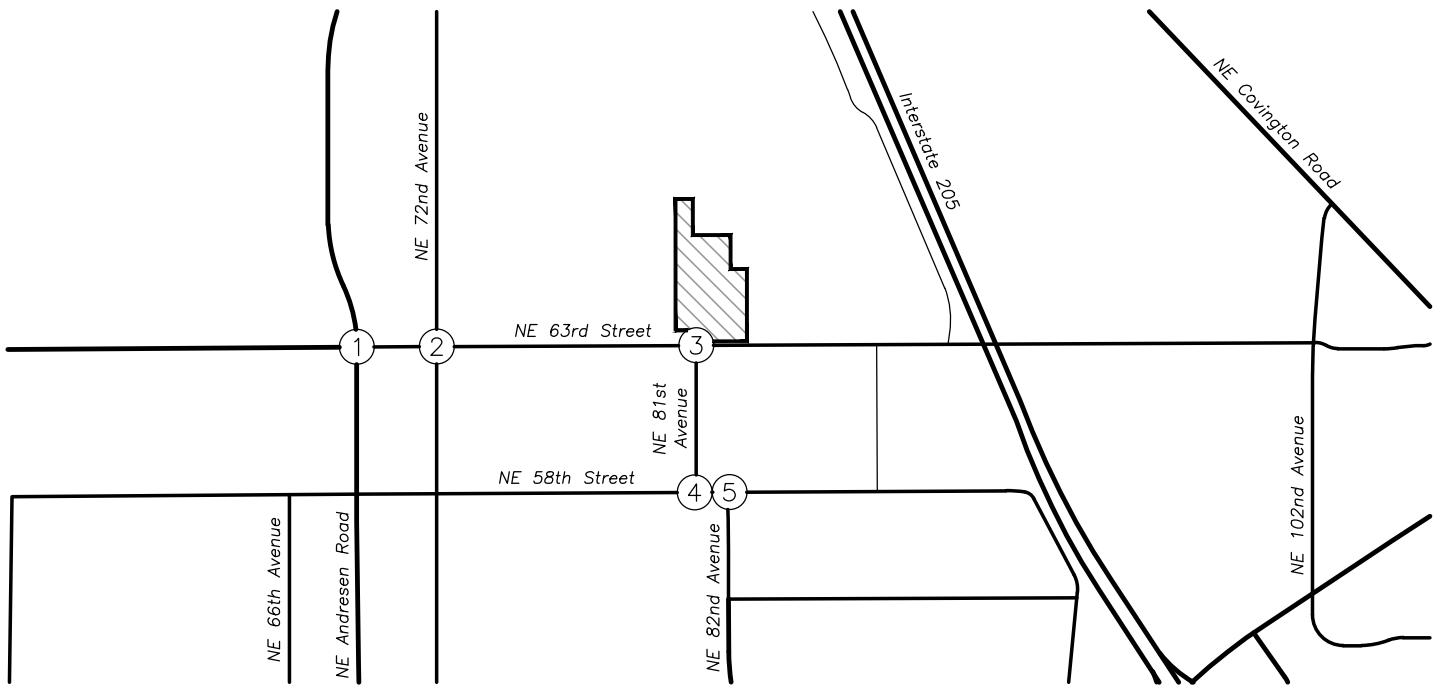
AM PEAK HOUR



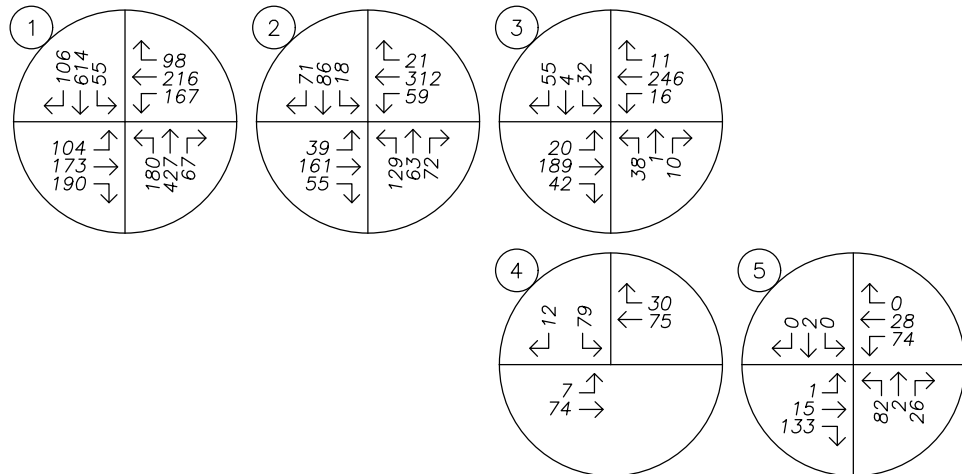
PM PEAK HOUR



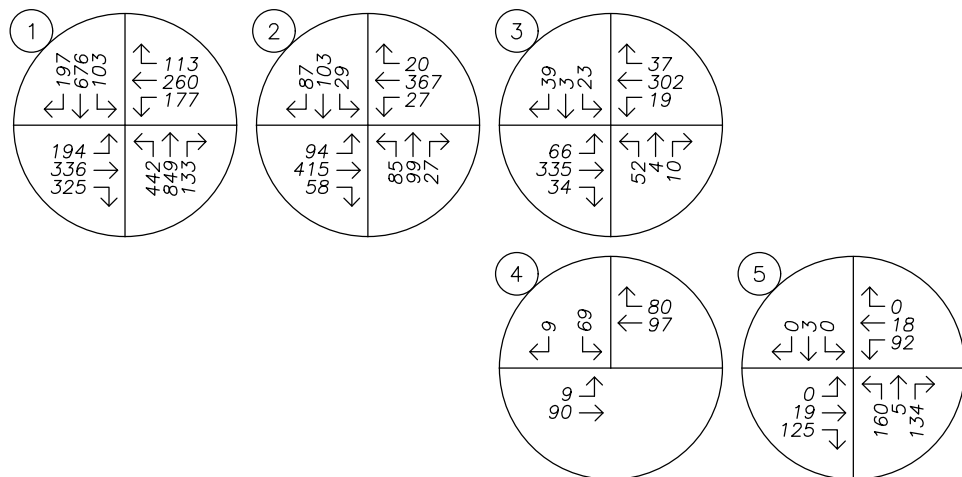
no scale



AM PEAK HOUR



PM PEAK HOUR



no scale

Safety Analysis

Crash History Review

Using data obtained from the Washington Department of Transportation (WSDOT) Crash Data and Reporting Branch, a review of the most recent available five years of crash history (January 2018 to December 2022) at the study intersections was performed. The crash data was evaluated based on the number of crashes, the type of collisions, the severity of the collisions, and the resulting crash rate for the intersection.

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the PM peak hour represents approximately 10% of the annual average daily traffic (AADT) at the intersection. Crash rates in excess of 1.00 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

With regard to crash severity, WSDOT classifies crashes in the following categories:

- *No Apparent Injury* (NA);
- *Possible Injury* (P);
- *Suspected Minor Injury* (SM);
- *Suspected Serious Injury* (SS); and
- *Fatality or Fatal Injury*.

Table 4 provides a summary of crash types while Table 5 summarizes crash severities and rates for the study intersections. Crash data is included in the technical appendix to this report.

Table 4: Crash Type Summary

Number	Intersection	Crash Type							Total
		Rear End	Turn	Angle	Fixed Object	Side swipe	Ped/ Bike	Other	
1	NE 63rd Street at NE Andresen Road	11	1	5	0	0	1	0	18
2	NE 63rd Street at NE 72nd Avenue	3	6	3	1	1	1	0	15
3	NE 63rd Street at NE 81st Avenue	0	0	0	0	0	0	0	0
4	NE 58th Street at NE 81st Avenue	0	0	0	1	0	0	1	2
5	NE 58th Street at NE 82nd Avenue	0	0	0	0	0	0	0	0



Table 5: Crash Severity and Rate Summary

Number	Intersection	Crash Severity					Total Crashes	AADT	Crash Rate
		NA	P	SM	SS	Fatal			
1	NE 63rd Street at NE Andresen Road	13	2	2	1	0	18	30,330	0.33
2	NE 63rd Street at NE 72nd Avenue	10	2	3	0	0	15	10,840	0.76
3	NE 63rd Street at NE 81st Avenue	0	0	0	0	0	0	6,300	0.00
4	NE 58th Street at NE 81st Avenue	2	0	0	0	0	2	2,950	0.37
5	NE 58th Street at NE 82nd Avenue	0	0	0	0	0	0	4,720	0.00

Table Notes: **BOLDED** text indicates a crash rate in excess of 1.00 CMEV.

Per Tables 4 and 5, three of the reported crashes at the study intersections involved a pedestrian/bicyclist or were classified as *Suspected Serious Injury*. The following provides a summary description of these crashes in more detail.

NE 63rd Street at NE Andresen Road

Two of the reported crashes at the intersection involved a pedestrian or were classified as *Suspected Serious Injury*.

The pedestrian-related crash occurred when the driver of a southbound truck struck a pedestrian who was crossing at the intersection. The crash was coded as indicating the pedestrian failed to yield right-of-way to the traveling vehicle. The crash was classified as *Suspected Minor Injury* where one person involved in the crash sustained injury.

The crash that was classified as *Suspected Serious Injury* occurred when the driver of a southbound passenger car rear-ended another southbound passenger car. The driver who instigated the collision was exceeding a reasonable safe travel speed, noting that roadway conditions were likely slick due to snow/slush. Two people involved in the collision sustained injuries.

NE 63rd Street at NE 72nd Avenue

One of the reported crashes at the intersection involved a pedestrian. The crash occurred when the driver of a westbound left-turning passenger car was inattentive and failed to yield right-of-way to a pedestrian who was crossing at the intersection. The crash was classified as *Suspected Minor Injury* where one person involved in the crash sustained injury.

Analysis Summary

Based on a review of available crash data, no significant trends or crash patterns were identified at the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

Sight Distance Evaluation

Methodology

Sight distances were evaluated at the future planned north leg at the intersection of NE 63rd Street at NE 81st Avenue. The minimum required intersection sight distance was determined in accordance with the City of Vancouver's Municipal Code Section 11.80.140. These standards state that intersection sight distance measurements must comply with standards established in *A Policy on Geometric Design of Highways and Streets*². According to AASHTO, the driver's eye is assumed to be approximately 15 feet (14.5 feet specifically) from the near edge of the nearest travel lane (or traveled way) of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Per the AASHTO manual, intersection sight distance is an operation measure intended to provide sufficient line of sight along the major-street so that a driver could turn from the minor-street approach without impeding traffic flow. Conversely, stopping sight distance is considered the minimum requirement to ensure safe operation of an intersection. This is the distance that allows an oncoming driver to see a hazard on the roadway, react, and come to a complete stop, if necessary, to avoid a collision.

Field Measurements

Based on a posted speed of 35 mph along NE 63rd Street, the minimum recommended intersection sight distances to allow for safe and efficient operation of the intersection is 415 feet to the west for southbound left-turning vehicles (when considering the need to cross one additional travel lane) and 335 feet to the east for southbound right-turning vehicles. In both directions, sight distances were measured to be in excess of 450 feet.

Analysis Findings

Based on the analysis, adequate intersection sight distances are available at the site access approach at the intersection of NE 63rd Street at NE 81st Avenue to allow for safe and efficient operation of the intersection. No mitigation is necessary or recommended at the intersection with respect to intersection sight distance.

² American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition, 2018.

Warrants Analysis

Left-turn lane and preliminary traffic signal warrants were examined for the study intersections where such treatments would be applicable.

Left-Turn Lane Warrants

A left-turn refuge lane is primarily a safety consideration for the major-street of unsignalized, minor-street stop-controlled intersections, removing left-turning vehicles from the through traffic stream. Two methods for evaluating left-turn lane warrants were utilized:

- Left-turn lane warrants developed by the Transportation Research Board (TRB) from the *National Cooperative Highway Research Project's (NCHRP) Report 457*.
- Section 1310.02(13)(a) *One-Way Left-Turn Lanes* and Exhibit 1310-9 *Left-Turn Storage Guidelines: Two-Lane, Unsignalized* from the WSDOT Design Manual.

Turn lane warrants were evaluated based on the number of advancing vehicles, the number of turning vehicles, the travel speed, and the number of through lanes.

Per the NCHRP and WSDOT methodologies, left turn lane warrants are projected to be met at the eastbound approach at the intersection of NE 63rd Street at NE 81st Avenue under year 2026 conditions with the proposed zone change implemented. To accommodate this left-turn lane the existing median on the west intersection leg can be re-stripped accordingly. Left-turn lane warrants are not projected to be met at any of the other study intersections. No other new left-turn lanes are necessary or recommended at these study intersections.

Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for the unsignalized study intersections to determine whether the installation of a new traffic signal will be warranted at the intersections under future year 2031 conditions. Based on the preliminary analysis following a review of Warrant 1 in the *Manual on Uniform Traffic Control Devices*, or MUTCD, traffic signal warrants are not projected to be met at the unsignalized study intersections under year 2031 conditions with the zone change implemented. Therefore, no new traffic signals are necessary or recommended as part of the proposed comprehensive plan amendment/zone map change application.



Operational Analysis

Intersection Capacity Analysis

A capacity and delay analysis were conducted for the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)³. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

Performance Standards

According to City of Vancouver Municipal Code section 11.80.130 *Traffic Impact Analysis*, the City's performance standards include the following:

- B. A proposed development that adds at least five net new peak hour trips to an intersection approach operating at an LOS E or lower within the required traffic impact analysis area may be denied based upon any of the following:*
- 1. For signalized intersections, when off-site intersection conditions are at a LOS F, or*
 - 2. For signalized intersections, when the LOS E and the volume to capacity ratio is greater than 0.95, or*
 - 3. For unsignalized intersections, when the volume to capacity ratio for any lane on any approach is greater than 0.95, or*
 - 4. When significant traffic hazards would be caused or materially aggravated by the proposed development, or*
 - 5. Notwithstanding "a" through "d" of this subsection, traffic impacts to intersections on corridors built to ultimate capacity will be evaluated against the LOS standards identified in an adopted Corridor Management Plan.*

Delay & Capacity Analysis

The study intersections were analyzed utilizing methodologies and parameters detailed in the *WSDOT Synchro & SimTraffic Protocol*⁴ document. Of specific note, the following peak hour factors (PHF) were incorporated in the analysis models:

- For existing year conditions, a PHF of no less than 0.80 was applied to each study intersection.
- For future year conditions, for study intersections where count data recorded a PHF of 0.90 or greater, the PHF was increased to 1.0. Where count data recorded a PHF of 0.89 or less the PHF was increased to 0.92.

³ Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.

⁴ [WSDOT Synchro & SimTraffic Protocol \(wa.gov\)](https://www.wa.gov/transportation/synchro-simtraffic-protocol)



- To avoid showing a future year scenario with lower delays or v/c ratios than under existing conditions, when necessary the PHF for intersections under the existing year scenario was increased to 0.92.

The LOS, delay, and v/c results of the capacity analysis are shown in Table 6 for the AM and PM peak hours. Note the TrafficWare Synchro software utilized for analysis does not report the overall v/c ratio of signalized intersections in the HCM 6th Edition capacity reports. Therefore, the signalized intersection v/c ratios were calculated utilizing HCM 2000 methodologies. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

Table 6: Intersection Capacity Analysis Summary

Analysis Scenario	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
1. NE 63rd Street at NE Andresen Road						
2023 Existing Conditions	C	32	0.56	D	42	0.75
2026 Background Conditions	C	34	0.60	D	45	0.84
2026 Background Conditions (Existing Zone)	C	34	0.61	D	45	0.84
2026 Background Conditions (Proposed Zone)	C	34	0.61	D	46	0.85
2031 Future Conditions (Existing Zone)	D	35	0.66	D	51	0.91
2031 Future Conditions (Proposed Zone)	D	37	0.66	D	52	0.91
2. NE 63rd Street at NE 72nd Avenue						
2023 Existing Conditions	B	13	0.32	B	11	0.32
2026 Background Conditions	B	13	0.35	B	11	0.34
2026 Background Conditions (Existing Zone)	B	12	0.38	B	11	0.35
2026 Background Conditions (Proposed Zone)	B	12	0.39	B	11	0.37
2031 Future Conditions (Existing Zone)	B	13	0.41	B	11	0.38
2031 Future Conditions (Proposed Zone)	B	13	0.43	B	11	0.40
3. NE 63rd Street at NE 81st Avenue						
2023 Existing Conditions	B	12	0.08	B	13	0.10
2026 Background Conditions	B	12	0.09	B	14	0.13
2026 Background Conditions (Existing Zone)	B	14	0.11	C	18	0.18
2026 Background Conditions (Proposed Zone)	B	15	0.17	C	21	0.21
2031 Future Conditions (Existing Zone)	B	15	0.12	C	20	0.21
2031 Future Conditions (Proposed Zone)	C	15	0.18	C	23	0.25

Table Notes: **BOLDED** text indicates intersection operation above jurisdictional standards.



Table 6: Intersection Capacity Analysis Summary (Continued)

Analysis Scenario	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
4. NE 58th Street at NE 81st Avenue						
2023 Existing Conditions	B	10	0.10	B	10	0.09
2026 Background Conditions	B	10	0.11	B	10	0.10
2026 Background Conditions (Existing Zone)	B	10	0.11	B	10	0.11
2026 Background Conditions (Proposed Zone)	B	10	0.12	B	10	0.11
2031 Future Conditions (Existing Zone)	B	10	0.12	B	11	0.11
2031 Future Conditions (Proposed Zone)	B	10	0.12	B	11	0.12
5. NE 58th Street at NE 82nd Avenue						
2023 Existing Conditions	B	12	0.14	B	12	0.36
2026 Background Conditions	B	12	0.16	B	13	0.40
2026 Background Conditions (Existing Zone)	B	12	0.16	B	13	0.40
2026 Background Conditions (Proposed Zone)	B	13	0.16	B	13	0.41
2031 Future Conditions (Existing Zone)	B	13	0.17	B	14	0.45
2031 Future Conditions (Proposed Zone)	B	13	0.18	B	14	0.45

Table Notes: **BOLDED** text indicates intersection operation above jurisdictional standards.

Based on the results of the operational analysis, all study intersections are currently operating acceptably per City of Vancouver standards and are projected to continue operating acceptably through year 2031, approximately five years beyond an assumed buildout year of the site following approval of the proposed zone change. Accordingly, no operational mitigation is necessary or recommended at the study intersections.

Conclusions

No significant trends or crash patterns were identified at the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

Adequate intersection sight distances are available at the site access approach at the intersection of NE 63rd Street at NE 81st Avenue to allow for safe and efficient operation of the intersection. No mitigation is necessary or recommended at the intersection with respect to intersection sight distance.

Left turn lane warrants are projected to be met at the eastbound approach at the intersection of NE 63rd Street at NE 81st Avenue under year 2026 conditions with the proposed zone change implemented. To accommodate this left-turn lane the existing median on the west intersection leg can be re-stripped accordingly. Left-turn lane warrants are not projected to be met at any of the other study intersections. No other new left-turn lanes are necessary or recommended at these study intersections.

Traffic signal warrants are not projected to be met at the unsignalized study intersections under year 2031 conditions with the zone change implemented. Therefore, no new traffic signals are necessary or recommended as part of the proposed comprehensive plan/zone map change application.

All study intersections are currently operating acceptably per City of Vancouver standards and are projected to continue operating acceptably through year 2031, approximately five years beyond an assumed buildout year of the site following approval of the proposed zone change. Accordingly, no operational mitigation is necessary or recommended at the study intersections.

Appendix A – Trip Generation and Distribution

Trip Generation

RTC Data





TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

Existing Low Density R-9 Zone

Land Use: Single-Family Detached Housing

Land Use Code: 210

Land Use Subcategory: All Sites

Setting/Location: General Urban/Suburban

Variable: Dwelling Units

Trip Type: Vehicle

Formula Type: Rate

Variable Quantity: 105

AM PEAK HOUR

Trip Rate: 0.75

	Enter	Exit	Total
Directional Split	25%	75%	
Trip Ends	20	59	79

PM PEAK HOUR

Trip Rate: 1.00

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	66	39	105

WEEKDAY

Trip Rate: 10.00

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	525	525	1,050

SATURDAY

Trip Rate: 9.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	498	498	996

Source: Trip Generation Manual, 11th Edition & City of Vancouver Policy



TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

Proposed High Density R-22 Zone

Land Use: Multifamily Housing (Low-Rise)

Land Use Code: 220

Land Use Subcategory: Not Close to Rail Transit

Setting/Location: General Urban/Suburban

Variable: Dwelling Units

Trip Type: Vehicle

Formula Type: Rate

Variable Quantity: **283**

AM PEAK HOUR

Trip Rate: 0.4

	Enter	Exit	Total
Directional Split	24%	76%	
Trip Ends	27	86	113

PM PEAK HOUR

Trip Rate: 0.51

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	91	53	144

WEEKDAY

Trip Rate: 6.74

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	954	954	1,908

SATURDAY

Trip Rate: 4.55

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	644	644	1,288

Caution: Small Sample Size

Source: Trip Generation Manual, 11th Edition



TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition
Proposed Commercial and Mixed Use CC Zone

Land Use: Health/Fitness Club
Land Use Code: 492
Land Use Subcategory: All Sites
Setting/Location: General Urban/Suburban
Variable: 1000 SF GFA
Trip Type: Vehicle
Variable Quantity: 8

AM PEAK HOUR

Trip Rate: 1.31

	Enter	Exit	Total
Directional Split	51%	49%	
Trip Ends	5	5	10

PM PEAK HOUR

Trip Rate: 3.45

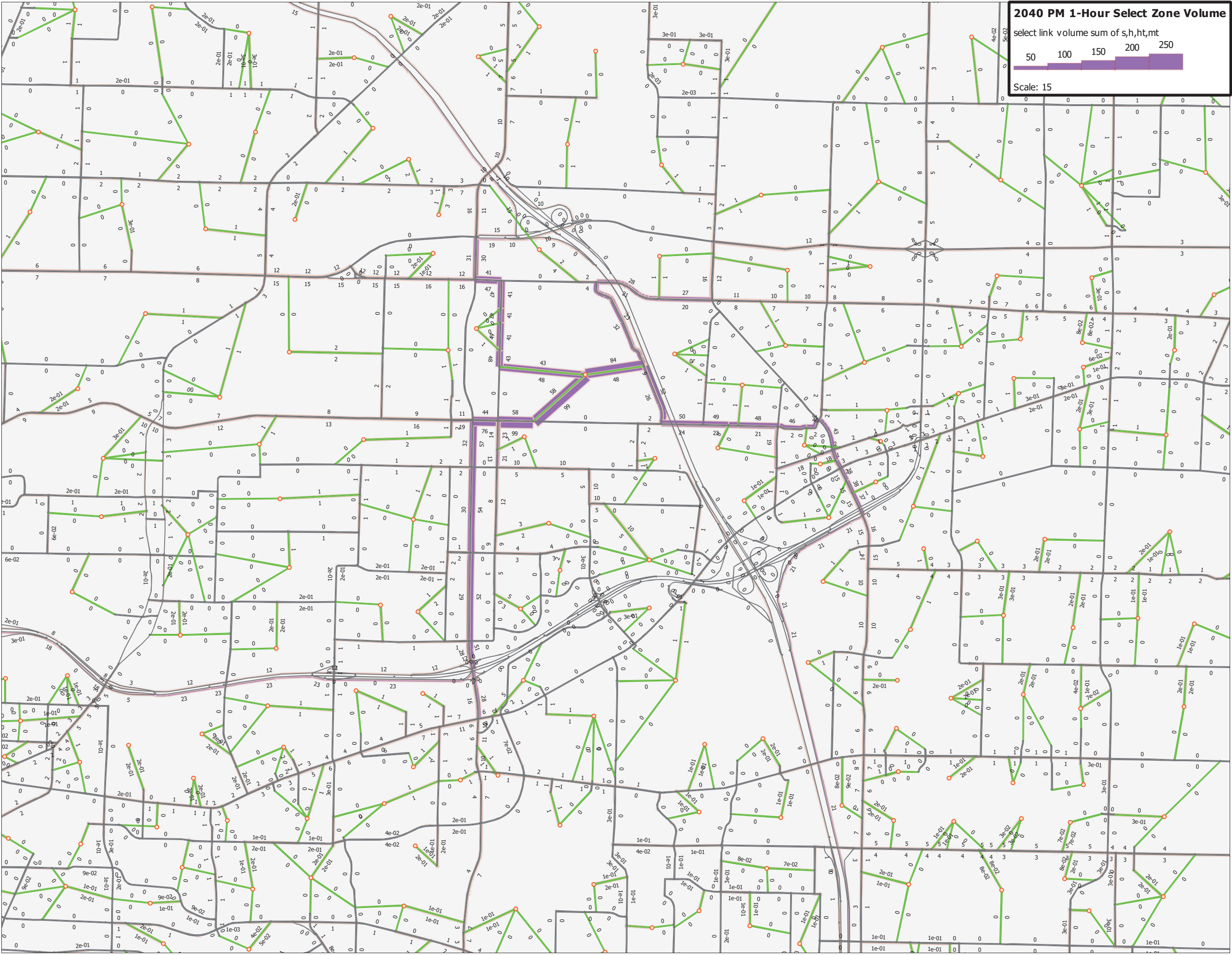
	Enter	Exit	Total
Directional Split	57%	43%	
Trip Ends	16	12	28

WEEKDAY

Trip Rate: 34.5

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	138	138	276

Assumed to be 10 times the PM Peak Hour



Appendix B – Traffic Volumes

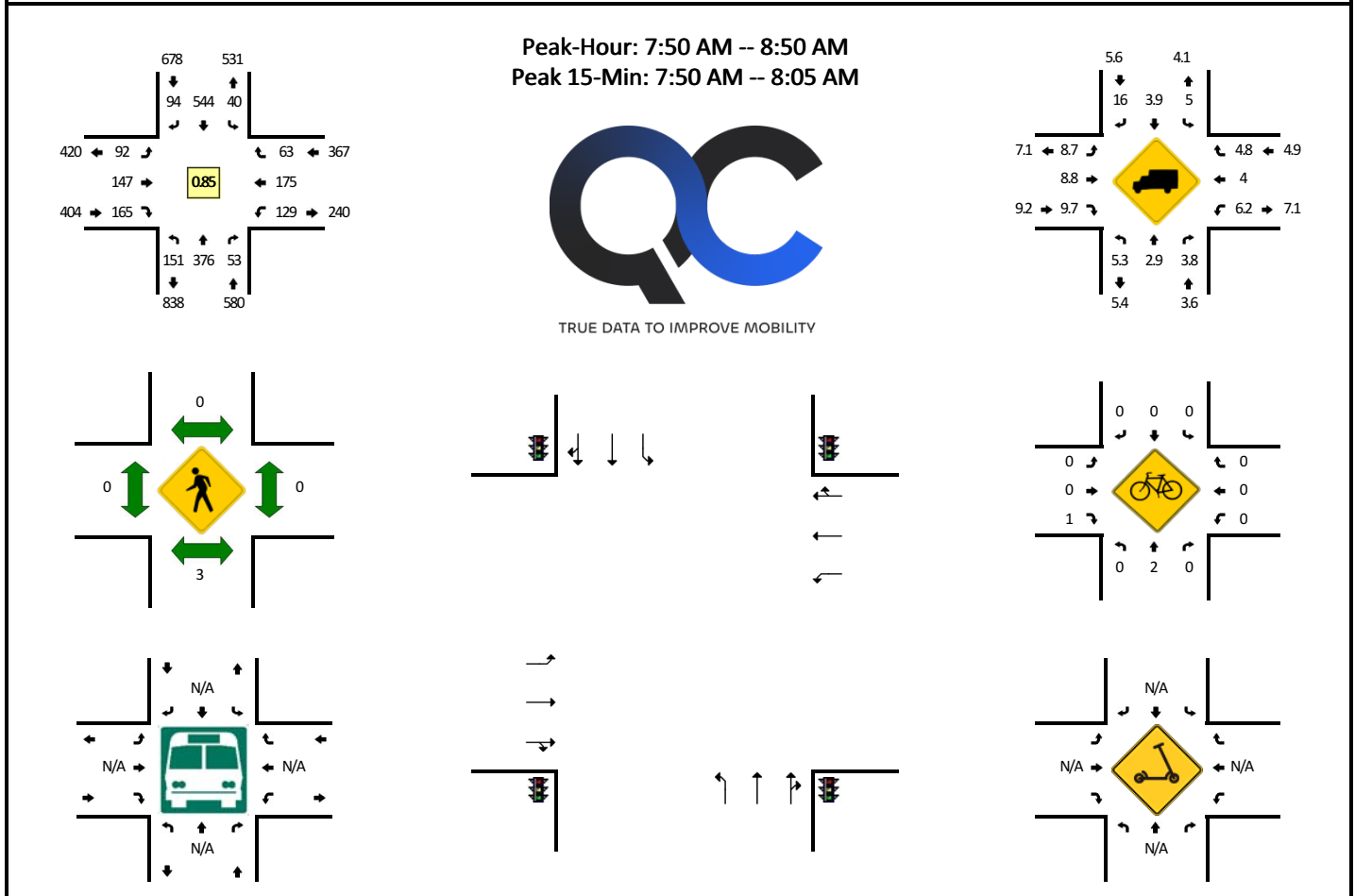
Traffic Counts

In-Process Data



LOCATION: NE Andresen Rd -- NE 63rd St
CITY/STATE: Minnehaha, WA

QC JOB #: 16335701
DATE: Thu, Sep 21 2023

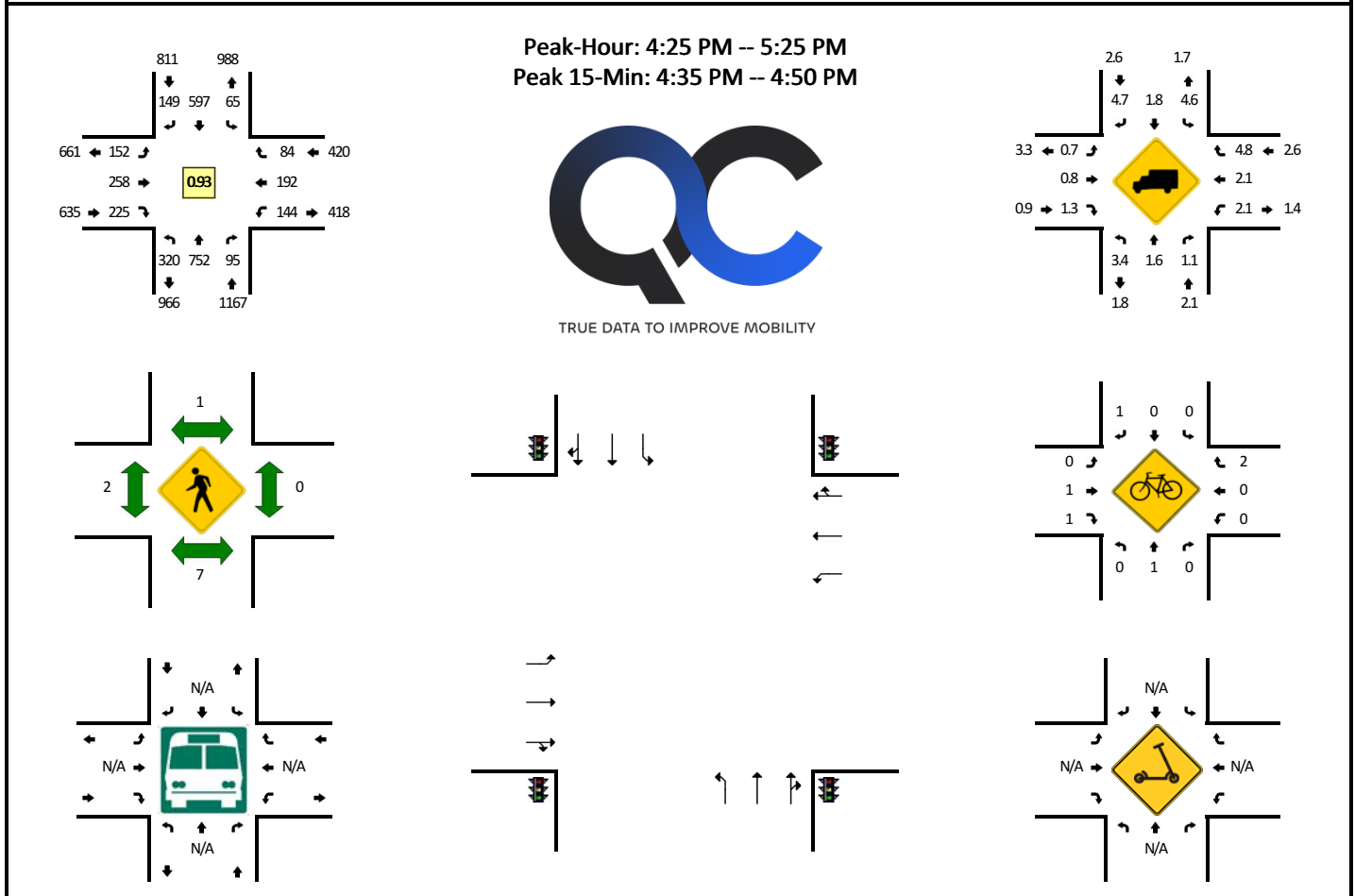


5-Min Count Period Beginning At	NE Andresen Rd (Northbound)				NE Andresen Rd (Southbound)				NE 63rd St (Eastbound)				NE 63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	8	22	4	0	4	23	1	0	2	8	7	0	6	17	4	0	106	
7:05 AM	3	16	1	0	2	26	5	0	5	12	12	0	10	12	2	0	106	
7:10 AM	15	19	5	0	0	28	2	0	7	7	14	0	2	10	8	0	117	
7:15 AM	5	27	2	0	1	32	6	0	6	7	8	0	11	13	3	0	121	
7:20 AM	13	24	5	0	3	25	6	0	4	8	10	0	9	10	5	0	122	
7:25 AM	12	15	3	0	1	30	4	0	5	10	11	0	8	16	7	0	122	
7:30 AM	6	22	1	0	2	34	2	0	6	8	9	0	13	9	4	0	116	
7:35 AM	6	36	1	0	3	37	9	0	6	9	12	0	12	9	9	0	149	
7:40 AM	11	23	5	0	3	43	3	0	10	10	13	0	11	23	2	0	157	
7:45 AM	9	40	2	0	6	45	9	0	4	3	9	0	7	19	5	0	158	
7:50 AM	16	41	3	0	4	57	17	0	11	14	24	0	10	24	10	0	231	
7:55 AM	13	28	5	0	5	49	6	0	7	16	12	0	14	15	7	0	177	1682
8:00 AM	14	36	8	0	3	57	4	0	6	14	8	0	17	17	8	0	192	1768
8:05 AM	8	31	2	0	1	49	9	0	9	11	14	0	16	12	6	0	168	1830
8:10 AM	20	36	6	0	3	31	5	0	10	12	9	0	9	20	3	0	164	1877
8:15 AM	9	31	5	0	4	44	8	0	10	12	14	0	13	17	3	0	170	1926
8:20 AM	4	21	4	0	1	39	7	0	8	13	7	0	2	19	6	0	131	1935
8:25 AM	21	28	3	0	4	29	13	0	4	12	13	0	6	10	1	0	144	1957
8:30 AM	12	25	4	0	5	39	5	0	2	11	8	0	7	7	5	0	130	1971
8:35 AM	3	29	5	0	4	37	4	0	10	9	16	0	13	11	6	0	147	1969
8:40 AM	17	37	5	0	3	51	8	0	5	10	20	0	12	14	3	0	185	1997
8:45 AM	14	33	3	0	3	62	8	0	10	13	20	0	10	9	5	0	190	2029
8:50 AM	10	34	5	0	0	35	3	0	10	10	19	0	7	10	4	0	147	1945
8:55 AM	11	23	3	0	2	34	17	0	6	14	4	0	7	17	6	0	144	1912
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	172	420	64	0	48	652	108	0	96	176	176	0	164	224	100	0	2400	
Heavy Trucks	0	8	0		8	24	12		0	4	16		16	8	12		108	
Buses																		
Pedestrians		8				0				0				0			8	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: NE Andresen Rd -- NE 63rd St
CITY/STATE: Minnehaha, WA

QC JOB #: 16335702
DATE: Thu, Sep 21 2023

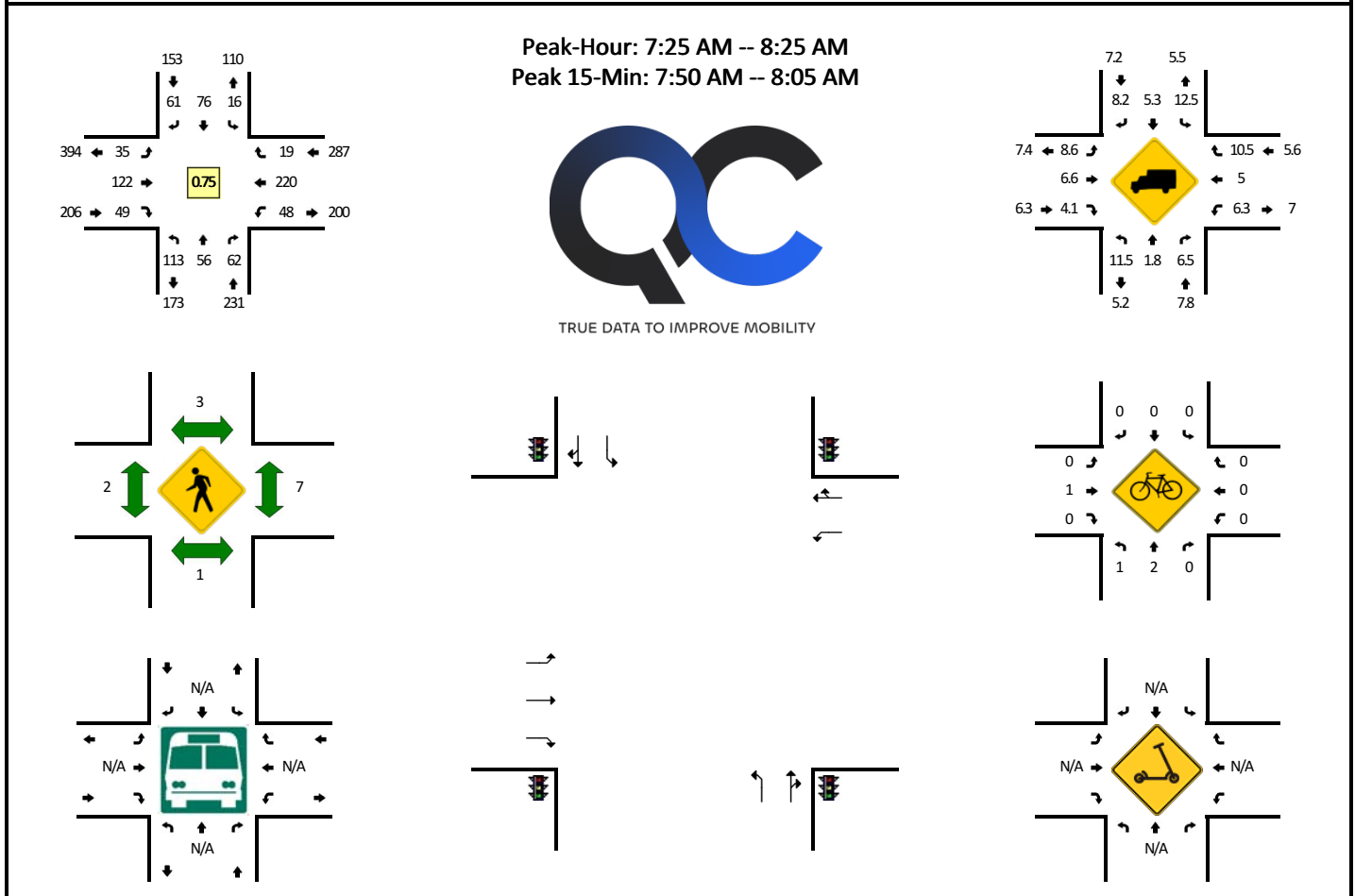


5-Min Count Period Beginning At	NE Andresen Rd (Northbound)				NE Andresen Rd (Southbound)				NE 63rd St (Eastbound)				NE 63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	16	67	7	0	4	50	7	0	15	19	30	0	8	10	6	0	239	
4:05 PM	30	61	8	0	7	43	7	0	19	33	24	0	5	17	6	0	260	
4:10 PM	30	69	6	0	2	37	8	0	9	18	21	0	11	19	6	0	236	
4:15 PM	20	66	7	0	4	52	20	0	15	20	20	0	10	14	2	0	250	
4:20 PM	18	53	8	0	2	41	13	0	8	27	11	0	14	26	3	0	224	
4:25 PM	23	50	6	0	6	32	13	0	16	23	25	0	9	14	4	0	221	
4:30 PM	36	67	9	0	9	57	10	0	4	20	22	0	11	13	2	0	260	
4:35 PM	24	65	6	0	4	46	17	0	12	18	16	0	19	23	10	0	260	
4:40 PM	30	73	7	0	6	44	16	0	18	24	19	0	17	12	8	0	274	
4:45 PM	42	73	13	0	7	52	14	0	6	18	24	0	9	16	5	0	279	
4:50 PM	18	58	8	0	4	56	14	0	10	26	21	0	9	22	2	0	248	
4:55 PM	24	54	7	0	8	44	15	0	18	26	19	0	14	12	7	0	248	2999
5:00 PM	40	69	5	0	4	40	11	0	21	20	15	0	13	20	13	0	271	3031
5:05 PM	19	75	7	0	5	65	6	0	12	21	12	0	13	14	12	0	261	3032
5:10 PM	20	58	8	0	4	42	6	0	17	23	14	0	13	19	8	0	232	3028
5:15 PM	24	45	10	0	3	60	11	0	10	21	22	0	10	14	7	0	237	3015
5:20 PM	20	65	9	0	5	59	16	0	8	18	16	0	7	13	6	0	242	3033
5:25 PM	15	45	4	0	1	39	5	0	8	17	14	0	15	20	6	0	189	3001
5:30 PM	24	70	3	0	5	41	11	0	11	22	18	0	10	12	4	0	231	2972
5:35 PM	26	46	10	0	4	56	12	0	14	15	23	0	6	13	5	0	230	2942
5:40 PM	17	49	7	0	3	43	11	0	14	24	21	0	18	28	8	0	243	2911
5:45 PM	27	41	15	0	9	39	10	0	12	23	14	0	7	31	2	0	230	2862
5:50 PM	21	61	6	0	4	43	6	0	11	27	21	0	3	6	4	0	213	2827
5:55 PM	26	67	7	0	3	63	18	0	8	13	14	0	7	11	3	0	240	2819
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	384	844	104	0	68	568	188	0	144	240	236	0	180	204	92	0	3252	
Heavy Trucks	8	16	0	0	4	12	4	0	0	4	4	0	4	4	0	0	60	
Buses																		
Pedestrians	4				4				4				0				12	
Bicycles	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
Scooters																		

Comments:

LOCATION: NE 72nd Ave -- NE 63rd St
CITY/STATE: Vancouver, WA

QC JOB #: 16335703
DATE: Thu, Sep 21 2023

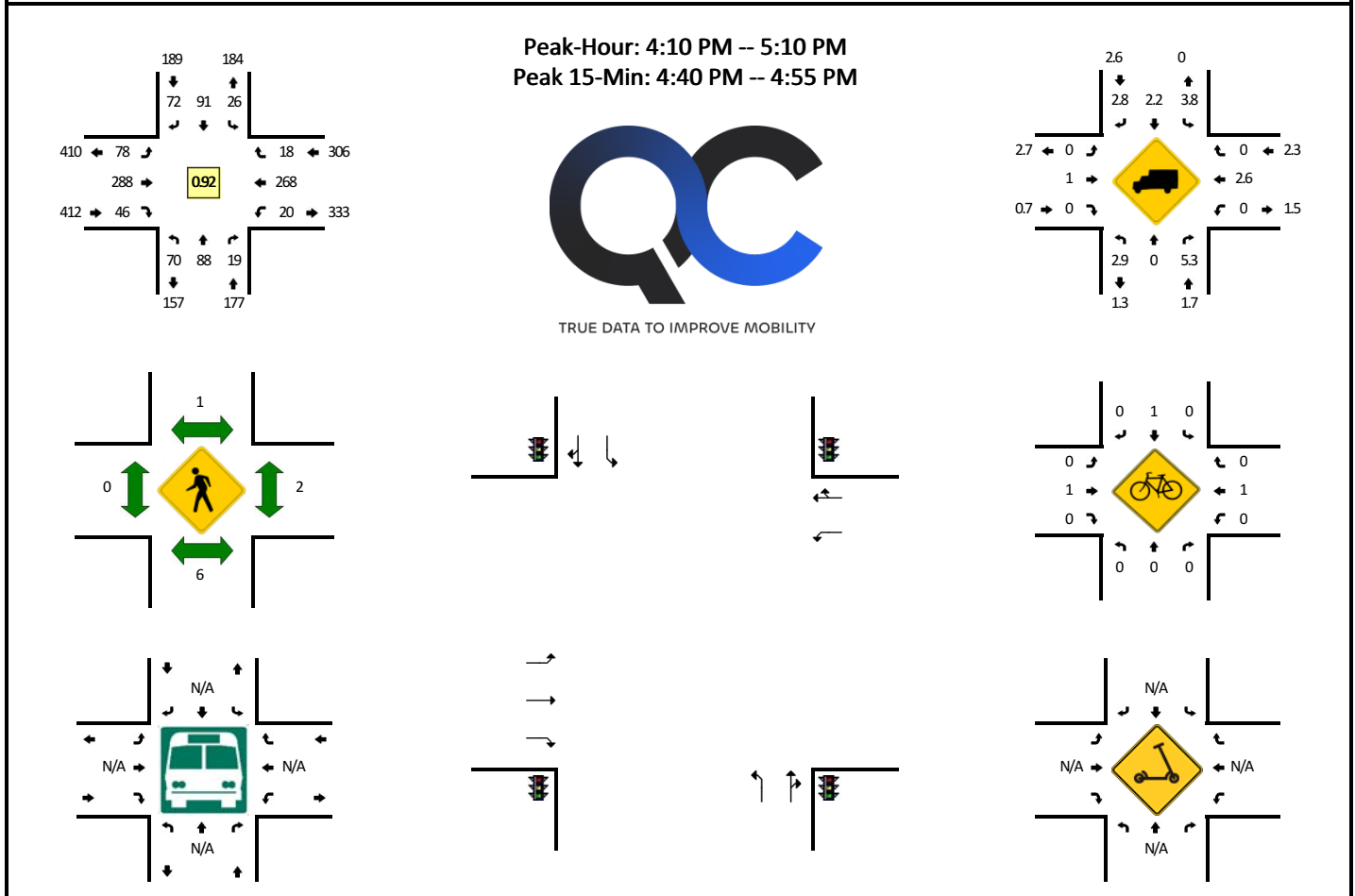


5-Min Count Period Beginning At	NE 72nd Ave (Northbound)				NE 72nd Ave (Southbound)				NE 63rd St (Eastbound)				NE 63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	4	0	0	0	2	4	0	3	10	1	0	2	8	0	0	36	
7:05 AM	1	1	1	0	0	3	8	0	1	4	4	0	0	16	0	0	39	
7:10 AM	3	6	0	0	1	4	4	0	1	10	4	0	1	15	0	0	49	
7:15 AM	2	2	1	0	0	3	5	0	0	5	5	0	0	18	3	0	44	
7:20 AM	2	2	0	0	0	8	9	0	3	9	5	0	1	11	1	0	51	
7:25 AM	3	1	4	0	2	6	9	0	2	8	3	0	1	20	2	0	61	
7:30 AM	3	3	0	0	1	4	4	0	1	7	2	0	6	17	3	0	51	
7:35 AM	5	3	0	0	1	8	7	0	0	5	7	0	3	16	0	0	55	
7:40 AM	8	4	2	0	1	5	6	0	3	10	5	0	3	16	2	0	65	
7:45 AM	10	7	7	0	1	8	7	0	1	6	5	0	4	21	0	0	77	
7:50 AM	14	7	12	0	2	5	6	0	3	11	7	0	8	27	2	0	104	
7:55 AM	16	6	8	0	2	13	3	0	3	12	4	0	8	15	1	0	91	723
8:00 AM	19	9	9	0	0	6	2	0	5	15	5	0	5	18	6	0	99	786
8:05 AM	18	8	13	0	2	4	2	0	3	10	5	0	4	19	1	0	89	836
8:10 AM	7	3	3	0	2	9	4	0	3	16	3	0	2	19	1	0	72	859
8:15 AM	6	2	2	0	1	5	8	0	4	13	1	0	1	12	1	0	56	871
8:20 AM	4	3	2	0	1	3	3	0	7	9	2	0	3	20	0	0	57	877
8:25 AM	1	6	0	0	1	1	7	0	3	13	3	0	1	11	0	0	47	863
8:30 AM	2	2	2	0	3	5	5	0	1	17	2	0	2	11	2	0	54	866
8:35 AM	2	3	0	0	0	1	6	0	3	9	1	0	1	20	0	0	46	857
8:40 AM	1	2	1	0	1	4	6	0	3	17	2	0	2	21	0	0	60	852
8:45 AM	5	3	1	0	5	7	6	0	3	14	2	0	1	14	2	0	63	838
8:50 AM	2	6	3	0	0	4	2	0	2	10	1	0	1	14	1	0	46	780
8:55 AM	7	3	1	0	1	3	3	0	5	10	2	0	2	19	2	0	58	747
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	196	88	116	0	16	96	44	0	44	152	64	0	84	240	36	0	1176	
Heavy Trucks	28	4	4		4	8	4		4	8	0		0	12	8		84	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	4	0	0		0	0	0		0	0	0		0	0	0		4	
Scooters																		

Comments:

LOCATION: NE 72nd Ave -- NE 63rd St
CITY/STATE: Vancouver, WA

QC JOB #: 16335704
DATE: Thu, Sep 21 2023

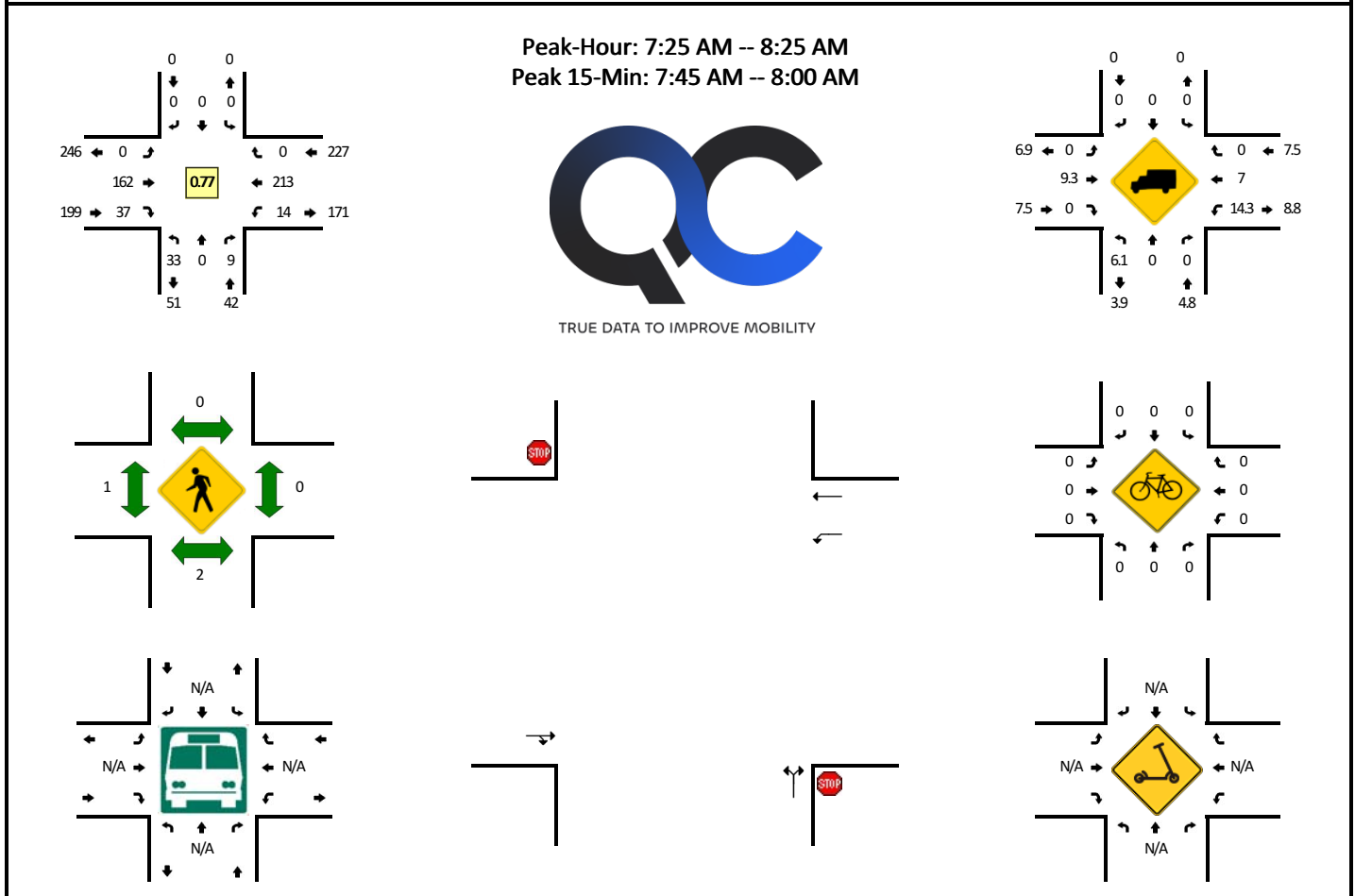


5-Min Count Period Beginning At	NE 72nd Ave (Northbound)				NE 72nd Ave (Southbound)				NE 63rd St (Eastbound)				NE 63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	8	3	0	3	6	2	0	8	18	1	0	3	15	4	0	76	
4:05 PM	3	6	2	0	1	12	1	0	8	30	2	0	0	20	4	0	89	
4:10 PM	5	7	1	0	4	7	6	0	4	29	2	0	2	26	0	0	93	
4:15 PM	5	9	2	0	3	5	4	0	3	22	1	0	0	21	1	0	76	
4:20 PM	3	6	3	0	2	9	11	0	5	21	5	0	2	20	2	0	89	
4:25 PM	5	6	1	0	2	6	6	0	13	25	3	0	2	20	1	0	90	
4:30 PM	4	4	3	0	1	12	8	0	6	25	6	0	1	23	1	0	94	
4:35 PM	7	7	1	0	2	2	8	0	5	19	2	0	4	28	3	0	88	
4:40 PM	7	8	3	0	4	3	6	0	8	21	5	0	1	22	4	0	92	
4:45 PM	9	7	0	0	2	12	2	0	8	25	5	0	2	28	3	0	103	
4:50 PM	6	11	2	0	0	10	8	0	8	25	2	0	2	26	0	0	100	
4:55 PM	6	4	1	0	1	8	3	0	4	24	6	0	1	15	0	0	73	1063
5:00 PM	6	8	2	0	4	8	4	0	7	26	5	0	2	21	1	0	94	1081
5:05 PM	7	11	0	0	1	9	6	0	7	26	4	0	1	18	2	0	92	1084
5:10 PM	4	7	2	0	4	5	6	0	4	21	5	0	2	23	0	0	83	1074
5:15 PM	6	7	3	0	2	3	3	0	5	30	7	0	0	19	1	0	86	1084
5:20 PM	3	3	2	0	2	11	4	0	8	17	4	0	5	20	1	0	80	1075
5:25 PM	4	6	4	0	2	6	5	0	5	14	2	0	3	24	0	0	75	1060
5:30 PM	2	7	1	0	1	6	6	0	4	21	6	0	0	20	3	0	77	1043
5:35 PM	3	6	1	0	3	8	6	0	6	16	7	0	1	26	5	0	88	1043
5:40 PM	5	5	1	0	1	5	5	0	6	20	3	0	2	25	0	0	78	1029
5:45 PM	7	7	4	0	1	3	8	0	5	34	12	0	2	25	1	0	109	1035
5:50 PM	5	4	2	0	6	4	4	0	9	22	4	0	6	9	3	0	78	1013
5:55 PM	2	8	3	0	0	7	1	0	6	19	1	0	3	20	0	0	70	1010
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	88	104	20	0	24	100	64	0	96	284	48	0	20	304	28	0	1180	
Heavy Trucks	0	0	0	0	0	4	4	0	0	0	0	0	0	12	0	0	20	
Buses																		
Pedestrians		16				0				0				4			20	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

Comments:

LOCATION: NE 81st Ave -- NE 63rd St
CITY/STATE: Vancouver, WA

QC JOB #: 16335705
DATE: Thu, Sep 21 2023

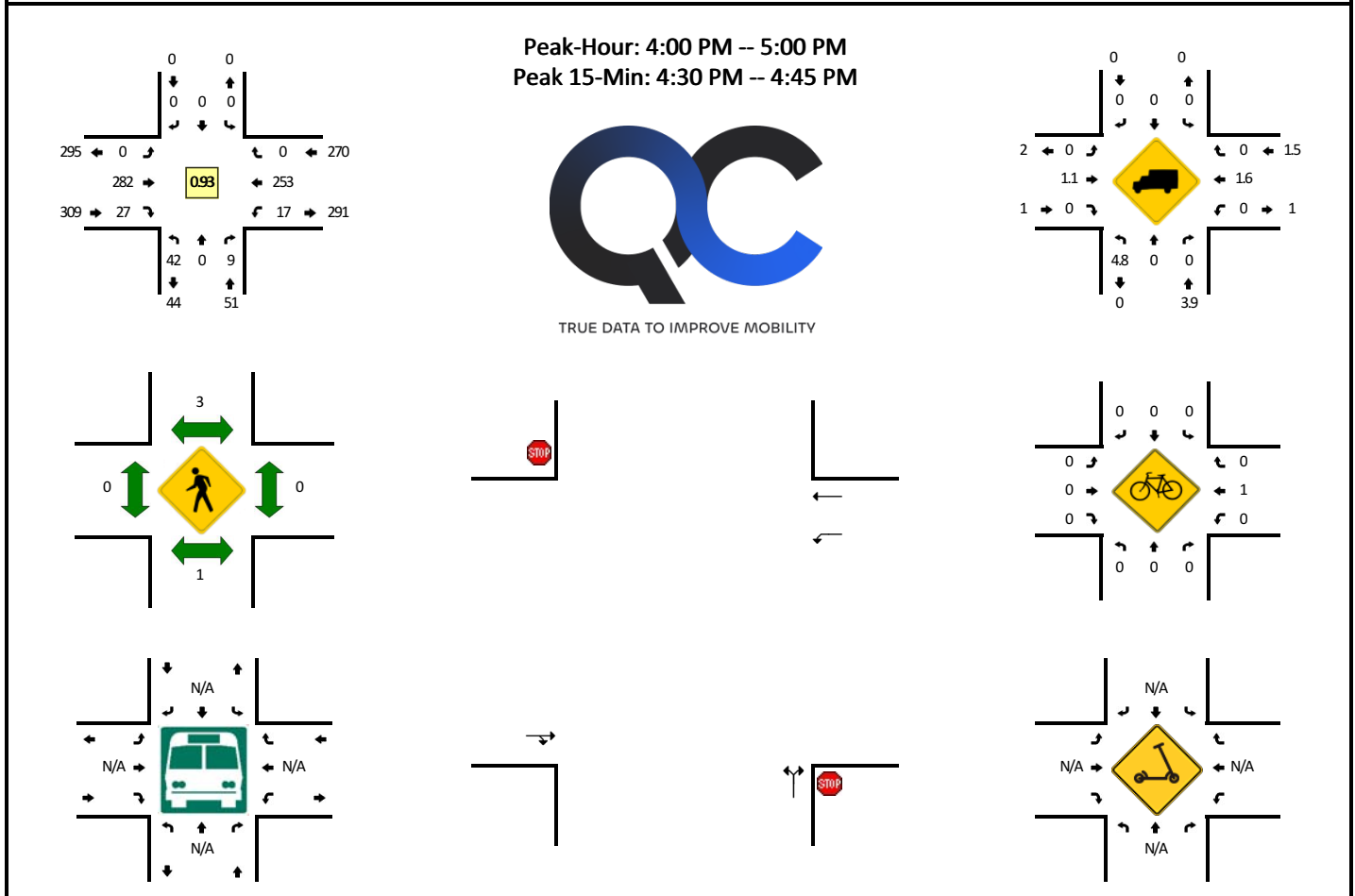


5-Min Count Period Beginning At	NE 81st Ave (Northbound)				NE 81st Ave (Southbound)				NE 63rd St (Eastbound)				NE 63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	9	0	0	16	
7:05 AM	2	0	0	0	0	0	0	0	0	2	4	0	1	13	0	0	22	
7:10 AM	1	0	0	0	0	0	0	0	0	11	2	0	2	15	0	0	31	
7:15 AM	1	0	0	0	0	0	0	0	0	5	0	0	1	14	0	0	21	
7:20 AM	2	0	1	0	0	0	0	0	0	7	3	0	0	10	0	0	23	
7:25 AM	1	0	0	0	0	0	0	0	0	14	0	0	2	18	0	0	35	
7:30 AM	4	0	0	0	0	0	0	0	0	9	1	0	1	16	0	0	31	
7:35 AM	3	0	1	0	0	0	0	0	0	4	3	0	0	18	0	0	29	
7:40 AM	2	0	2	0	0	0	0	0	0	11	2	0	2	14	0	0	33	
7:45 AM	1	0	1	0	0	0	0	0	0	11	6	0	2	21	0	0	42	
7:50 AM	4	0	1	0	0	0	0	0	0	21	5	0	2	28	0	0	61	
7:55 AM	1	0	2	0	0	0	0	0	0	18	6	0	0	22	0	0	49	393
8:00 AM	5	0	0	0	0	0	0	0	0	16	4	0	3	14	0	0	42	419
8:05 AM	1	0	1	0	0	0	0	0	0	20	4	0	0	19	0	0	45	442
8:10 AM	5	0	0	0	0	0	0	0	0	10	3	0	0	13	0	0	31	442
8:15 AM	0	0	1	0	0	0	0	0	0	16	1	0	0	13	0	0	31	452
8:20 AM	6	0	0	0	0	0	0	0	0	12	2	0	2	17	0	0	39	468
8:25 AM	2	0	0	0	0	0	0	0	0	8	3	0	2	11	0	0	26	459
8:30 AM	0	0	1	0	0	0	0	0	0	12	1	0	1	11	0	0	26	454
8:35 AM	3	0	0	0	0	0	0	0	0	13	2	0	1	11	0	0	30	455
8:40 AM	4	0	0	0	0	0	0	0	0	19	4	0	0	16	0	0	43	465
8:45 AM	1	0	2	0	0	0	0	0	0	13	3	0	0	16	0	0	35	458
8:50 AM	2	0	0	0	0	0	0	0	0	15	1	0	0	12	0	0	30	427
8:55 AM	1	0	0	0	0	0	0	0	0	14	3	0	0	16	0	0	34	412
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	0	16	0	0	0	0	0	0	200	68	0	16	284	0	0	608	
Heavy Trucks	0	0	0	0	0	0	0	0	0	24	0	0	0	24	0	0	48	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

Comments:

LOCATION: NE 81st Ave -- NE 63rd St
CITY/STATE: Vancouver, WA

QC JOB #: 16335706
DATE: Thu, Sep 21 2023

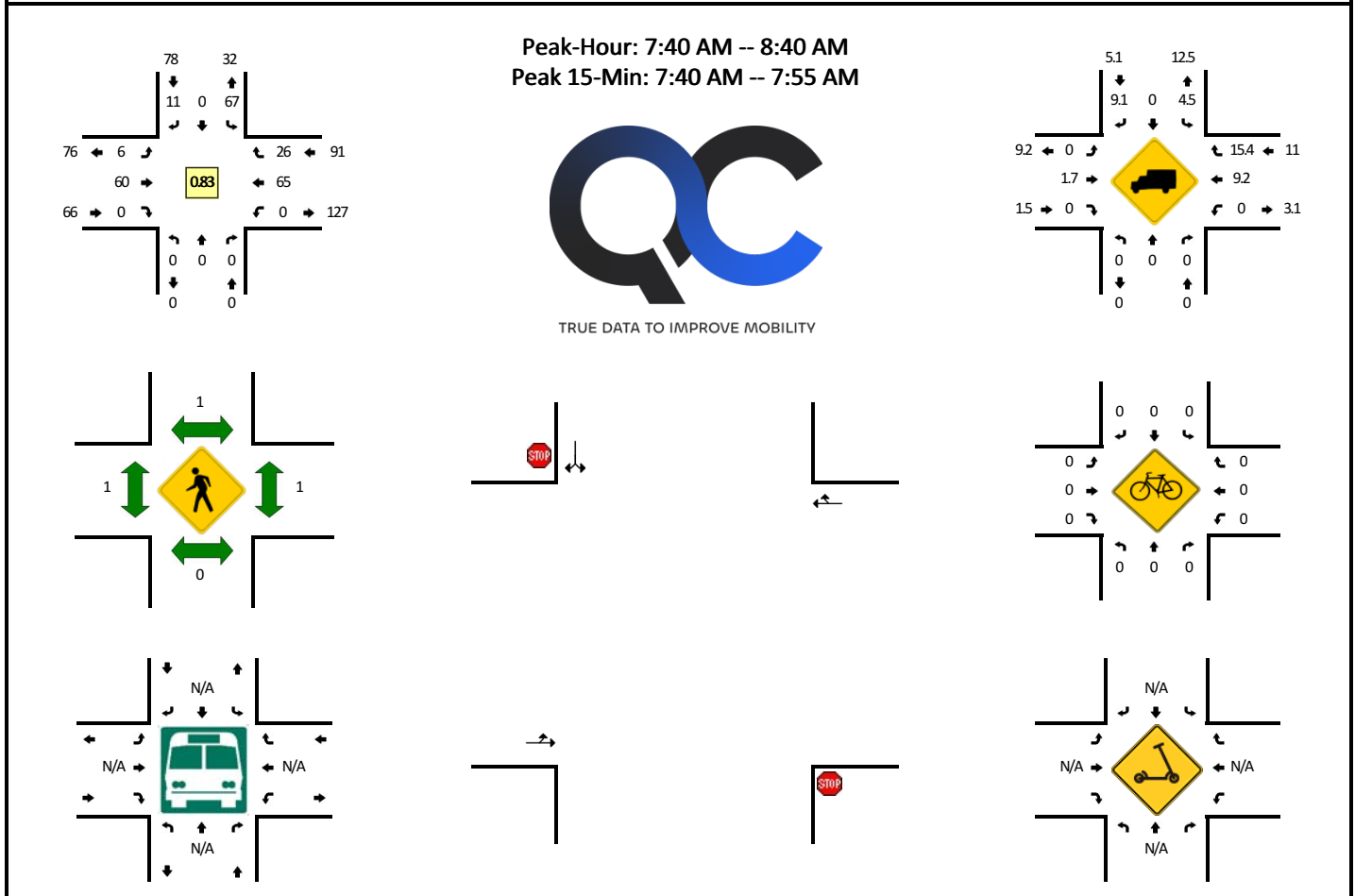


5-Min Count Period Beginning At	NE 81st Ave (Northbound)				NE 81st Ave (Southbound)				NE 63rd St (Eastbound)				NE 63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	0	0	0	0	0	0	0	33	1	0	1	21	0	0	60	
4:05 PM	4	0	1	0	0	0	0	0	0	31	2	0	2	17	0	0	57	
4:10 PM	3	0	0	0	0	0	0	0	0	22	3	0	2	21	0	0	51	
4:15 PM	0	0	1	0	0	0	0	0	0	26	4	0	1	24	0	0	56	
4:20 PM	3	0	1	0	0	0	0	0	0	19	1	0	2	21	0	0	47	
4:25 PM	4	0	1	0	0	0	0	0	0	18	3	0	2	18	0	0	46	
4:30 PM	3	0	0	0	0	0	0	0	0	26	4	0	1	22	0	0	56	
4:35 PM	5	0	0	0	0	0	0	0	0	19	1	0	2	30	0	0	57	
4:40 PM	5	0	4	0	0	0	0	0	0	22	3	0	1	21	0	0	56	
4:45 PM	5	0	0	0	0	0	0	0	0	20	1	0	1	25	0	0	52	
4:50 PM	3	0	1	0	0	0	0	0	0	25	3	0	0	20	0	0	52	
4:55 PM	3	0	0	0	0	0	0	0	0	21	1	0	2	13	0	0	40	630
5:00 PM	3	0	1	0	0	0	0	0	0	22	5	0	3	17	0	0	51	621
5:05 PM	5	0	0	0	0	0	0	0	0	23	6	0	1	14	0	0	49	613
5:10 PM	3	0	1	0	0	0	0	0	0	19	6	0	1	26	0	0	56	618
5:15 PM	2	0	2	0	0	0	0	0	0	24	3	0	0	19	0	0	50	612
5:20 PM	1	0	0	0	0	0	0	0	0	20	1	0	2	25	0	0	49	614
5:25 PM	2	0	0	0	0	0	0	0	0	17	2	0	0	22	0	0	43	611
5:30 PM	4	0	0	0	0	0	0	0	0	17	3	0	2	20	0	0	46	601
5:35 PM	3	0	0	0	0	0	0	0	0	18	4	0	3	25	0	0	53	597
5:40 PM	0	0	1	0	0	0	0	0	0	18	2	0	4	22	0	0	47	588
5:45 PM	2	0	1	0	0	0	0	0	0	27	4	0	1	22	0	0	57	593
5:50 PM	2	0	2	0	0	0	0	0	0	22	2	0	0	14	0	0	42	583
5:55 PM	0	0	0	0	0	0	0	0	0	27	1	0	2	19	0	0	49	592
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	52	0	16	0	0	0	0	0	0	268	32	0	16	292	0	0	676	
Heavy Trucks	0	0	0	0	0	0	0	0	0	8	0	0	0	12	0	0	20	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: NE 81st Ave -- NE 58th St
CITY/STATE: Vancouver, WA

QC JOB #: 16335709
DATE: Thu, Sep 21 2023

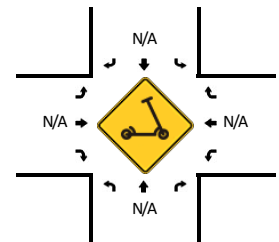
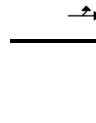
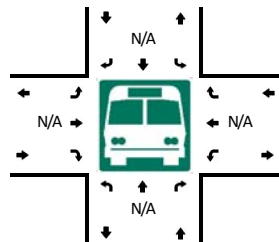
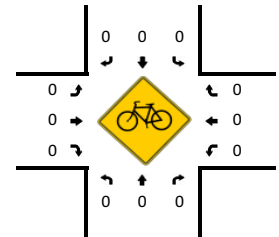
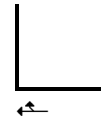
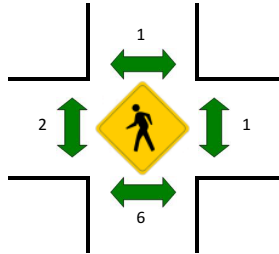
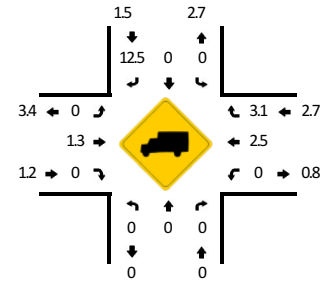
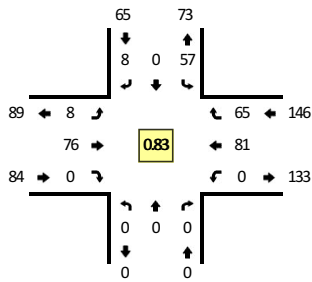


5-Min Count Period Beginning At	NE 81st Ave (Northbound)				NE 81st Ave (Southbound)				NE 58th St (Eastbound)				NE 58th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	3	1	0	8	
7:05 AM	0	0	0	0	7	0	0	0	0	4	0	0	0	0	1	2	14	
7:10 AM	0	0	0	0	7	0	0	0	0	2	0	0	0	0	3	2	14	
7:15 AM	0	0	0	0	1	0	0	0	0	5	0	0	0	0	2	2	10	
7:20 AM	0	0	0	0	3	0	1	0	0	2	0	0	0	0	6	3	15	
7:25 AM	0	0	0	0	1	0	0	0	0	2	0	0	0	0	4	1	8	
7:30 AM	0	0	0	0	2	0	0	0	0	4	0	0	0	0	5	3	14	
7:35 AM	0	0	0	0	4	0	1	0	0	2	0	0	0	0	5	3	15	
7:40 AM	0	0	0	0	4	0	2	0	2	7	0	0	0	0	11	2	28	
7:45 AM	0	0	0	0	6	0	2	0	0	5	0	0	0	0	5	1	19	
7:50 AM	0	0	0	0	5	0	2	0	2	6	0	0	0	0	7	2	24	
7:55 AM	0	0	0	0	10	0	1	0	1	5	0	0	0	0	8	1	26	195
8:00 AM	0	0	0	0	6	0	1	0	0	4	0	0	0	0	5	2	18	205
8:05 AM	0	0	0	0	5	0	0	0	0	0	0	0	0	0	6	2	13	204
8:10 AM	0	0	0	0	5	0	0	0	0	4	0	0	0	0	4	4	17	207
8:15 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	0	2	1	7	204
8:20 AM	0	0	0	0	5	0	0	0	0	14	0	0	0	0	3	5	27	216
8:25 AM	0	0	0	0	4	0	3	0	1	1	0	0	0	0	5	3	17	225
8:30 AM	0	0	0	0	7	0	0	0	0	6	0	0	0	0	7	2	22	233
8:35 AM	0	0	0	0	9	0	0	0	0	5	0	0	0	0	2	1	17	235
8:40 AM	0	0	0	0	5	0	0	0	0	4	0	0	0	0	7	4	20	227
8:45 AM	0	0	0	0	4	0	1	0	2	1	0	0	0	0	4	2	14	222
8:50 AM	0	0	0	0	1	0	0	0	1	7	0	0	0	0	4	3	16	214
8:55 AM	0	0	0	0	2	0	2	0	0	3	0	0	0	0	3	1	11	199
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	60	0	24	0	16	72	0	0	0	92	20	0	284	
Heavy Trucks	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	8	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

LOCATION: NE 81st Ave -- NE 58th St**CITY/STATE:** Vancouver, WA**QC JOB #:** 16335710**DATE:** Thu, Sep 21 2023

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

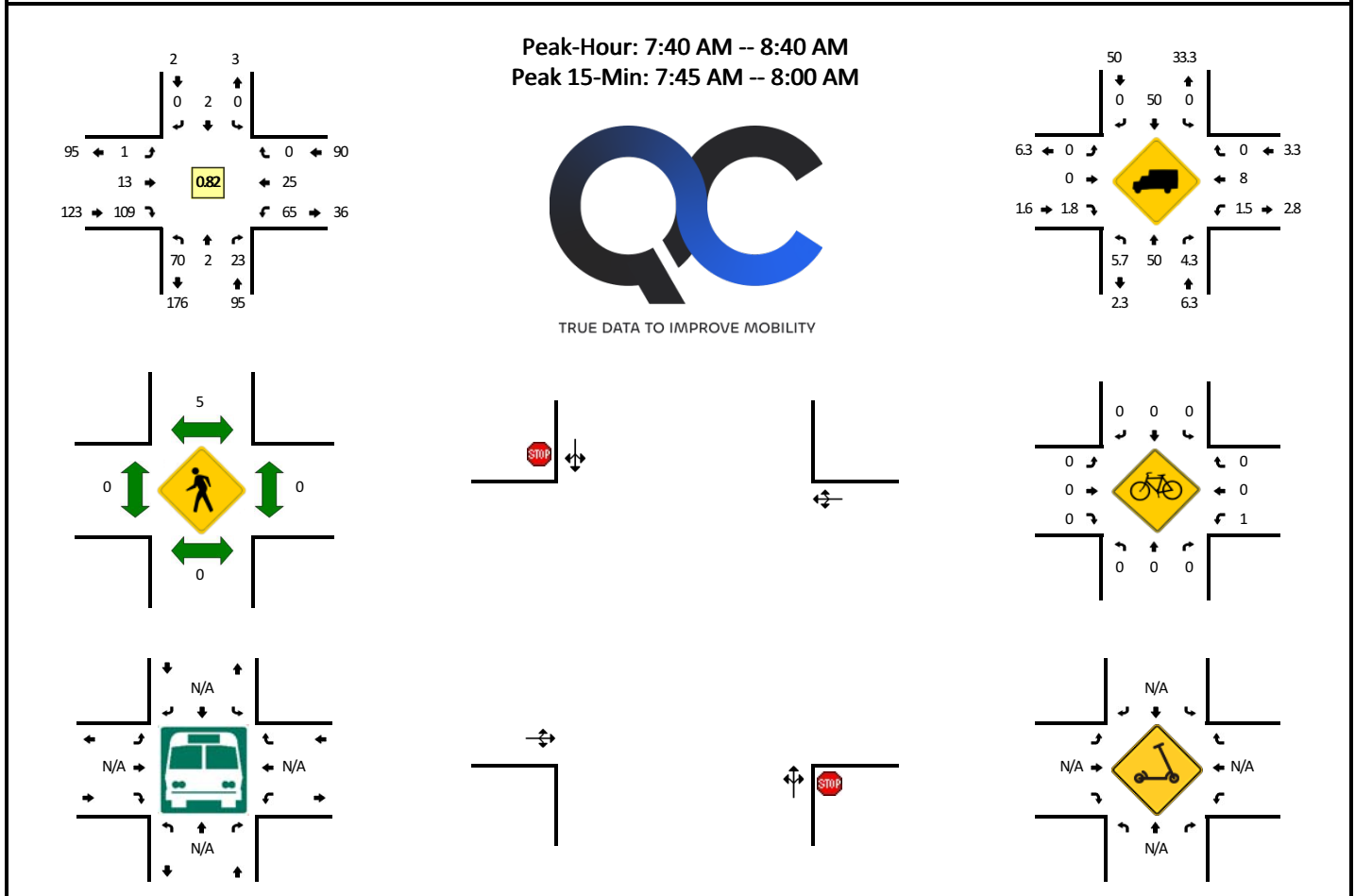


5-Min Count Period Beginning At	NE 81st Ave (Northbound)				NE 81st Ave (Southbound)				NE 58th St (Eastbound)				NE 58th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	0	1	0	0	1	0	0	0	7	4	0	14	
4:05 PM	0	0	0	0	6	0	0	0	1	3	0	0	0	8	3	0	21	
4:10 PM	0	0	0	0	6	0	0	0	0	12	0	0	0	8	2	0	28	
4:15 PM	0	0	0	0	4	0	0	0	0	4	0	0	0	5	3	0	16	
4:20 PM	0	0	0	0	1	0	1	0	0	8	0	0	0	7	4	0	21	
4:25 PM	0	0	0	0	3	0	1	0	0	1	0	0	0	6	3	0	14	
4:30 PM	0	0	0	0	5	0	0	0	0	8	0	0	0	7	7	0	27	
4:35 PM	0	0	0	0	2	0	0	0	1	7	0	0	0	5	5	0	20	
4:40 PM	0	0	0	0	4	0	1	0	0	14	0	0	0	9	8	0	36	
4:45 PM	0	0	0	0	5	0	1	0	2	10	0	0	0	5	4	0	27	
4:50 PM	0	0	0	0	5	0	2	0	0	2	0	0	0	12	5	0	26	
4:55 PM	0	0	0	0	3	0	1	0	0	1	0	0	0	13	5	0	23	273
5:00 PM	0	0	0	0	5	0	1	0	0	5	0	0	0	3	5	0	19	278
5:05 PM	0	0	0	0	6	0	1	0	0	1	0	0	0	9	7	0	24	281
5:10 PM	0	0	0	0	7	0	1	0	2	5	0	0	0	9	3	0	27	280
5:15 PM	0	0	0	0	7	0	0	0	3	6	0	0	0	2	3	0	21	285
5:20 PM	0	0	0	0	5	0	0	0	0	8	0	0	0	2	5	0	20	284
5:25 PM	0	0	0	0	3	0	0	0	0	9	0	0	0	5	8	0	25	295
5:30 PM	0	0	0	0	3	0	0	0	0	5	0	0	0	7	5	0	20	288
5:35 PM	0	0	0	0	5	0	1	0	0	2	0	0	0	9	5	0	22	290
5:40 PM	0	0	0	0	8	0	1	0	2	12	0	0	0	8	1	0	32	286
5:45 PM	0	0	0	0	5	0	1	0	2	8	0	0	0	13	5	0	34	293
5:50 PM	0	0	0	0	4	0	0	0	1	4	0	0	0	2	5	0	16	283
5:55 PM	0	0	0	0	1	0	0	0	1	6	0	0	0	9	1	0	18	278
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	56	0	16	0	8	104	0	0	0	104	68	0	356	
Heavy Trucks	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	0	12	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	4	0	0	0	0	0	0	0	4	0	0	0	4	0	0	12	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

LOCATION: NE 82nd Ct/NE 82nd Ave -- NE 58th St
CITY/STATE: Vancouver, WA

QC JOB #: 16335707
DATE: Thu, Sep 21 2023

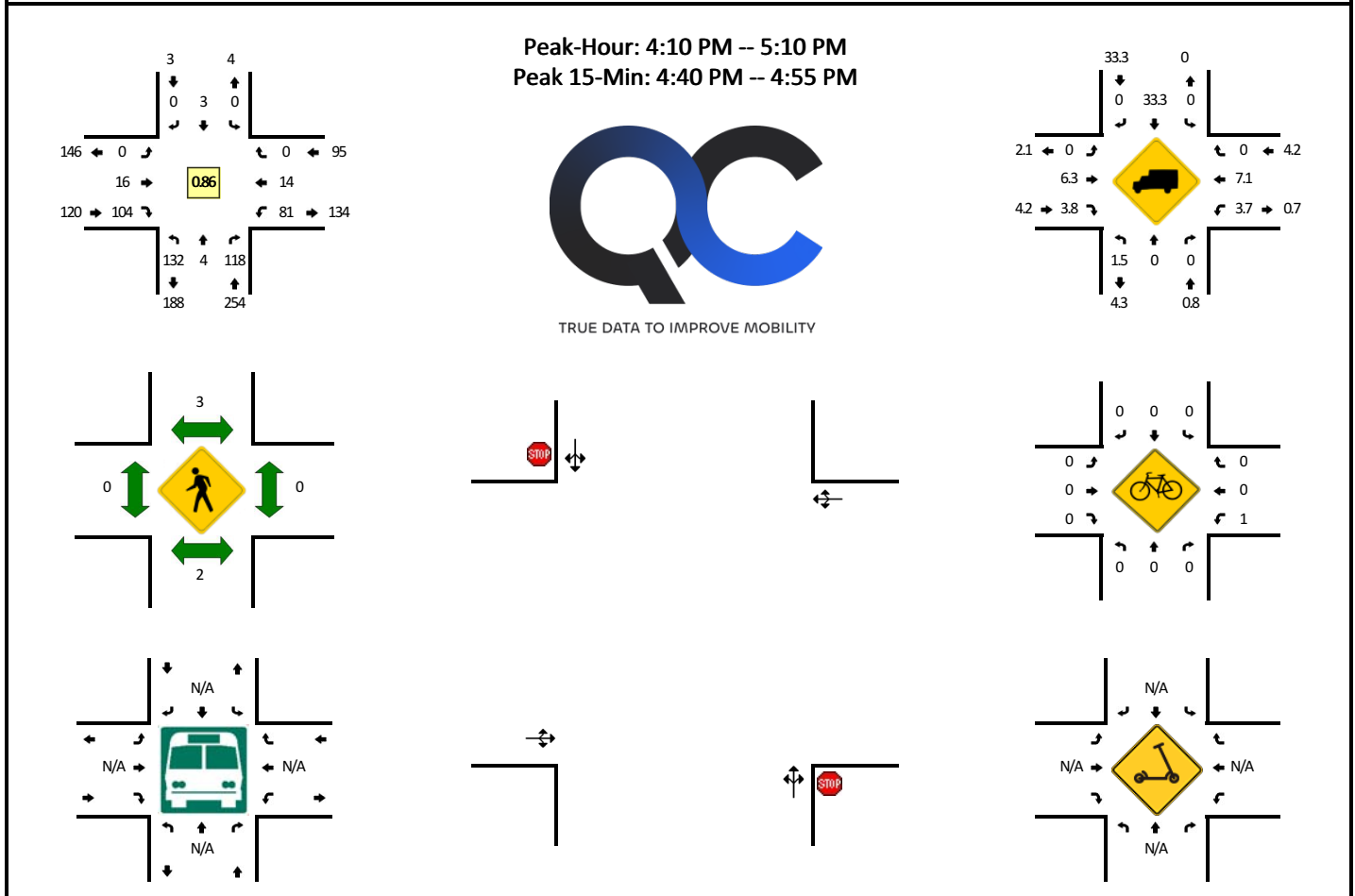


5-Min Count Period Beginning At	NE 82nd Ct/NE 82nd Ave (Northbound)				NE 82nd Ct/NE 82nd Ave (Southbound)				NE 58th St (Eastbound)				NE 58th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	0	2	0	0	0	0	0	0	0	4	0	4	1	0	0	14	
7:05 AM	2	0	2	0	0	0	0	0	0	0	11	0	3	1	0	0	19	
7:10 AM	2	1	1	0	0	0	0	0	0	1	8	0	4	1	0	0	18	
7:15 AM	3	0	3	0	0	0	0	0	0	0	5	0	7	1	0	0	19	
7:20 AM	8	0	1	0	0	0	0	0	0	1	5	0	7	1	0	0	23	
7:25 AM	2	0	1	0	0	0	0	0	0	0	3	0	7	3	0	0	16	
7:30 AM	7	0	0	0	0	0	0	0	0	0	6	0	7	1	0	0	21	
7:35 AM	6	0	1	0	0	0	1	0	0	0	6	0	9	1	0	0	24	
7:40 AM	10	0	2	0	0	1	0	0	0	0	11	0	9	3	0	0	36	
7:45 AM	2	0	1	0	0	0	0	0	0	0	11	0	10	4	0	0	28	
7:50 AM	6	0	3	0	0	0	0	0	0	3	6	0	8	3	0	0	29	
7:55 AM	8	0	7	0	0	0	0	0	0	3	14	0	5	1	0	0	38	285
8:00 AM	5	0	0	0	0	0	0	0	0	0	9	0	2	3	0	0	19	290
8:05 AM	7	0	1	0	0	0	0	0	0	0	2	0	4	3	0	0	17	288
8:10 AM	7	0	2	0	0	0	0	0	0	1	9	0	3	0	0	0	22	292
8:15 AM	3	0	1	0	0	0	0	0	0	0	4	0	8	1	0	0	17	290
8:20 AM	7	1	1	0	0	0	0	0	0	3	16	0	5	2	0	0	35	302
8:25 AM	4	0	1	0	0	0	0	0	0	0	4	0	4	2	0	0	15	301
8:30 AM	9	1	1	0	0	0	0	0	1	1	11	0	1	2	0	0	27	307
8:35 AM	2	0	3	0	0	1	0	0	0	2	12	0	6	1	0	0	27	310
8:40 AM	8	1	2	0	0	1	0	0	0	2	5	0	5	2	0	0	26	300
8:45 AM	4	0	3	0	0	0	0	0	0	2	6	0	6	0	0	0	21	293
8:50 AM	6	0	2	0	0	0	0	0	0	1	5	0	6	1	0	0	21	285
8:55 AM	5	0	1	0	0	0	0	0	0	0	6	0	5	0	0	0	17	264
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	64	0	44	0	0	0	0	0	0	24	124	0	92	32	0	0	380	
Heavy Trucks	0	0	4		0	0	0		0	0	0		0	0	0		4	
Buses																		
Pedestrians	0	0			0				0				0				0	
Bicycles	0	0	0		0	0	0		0	0	0		4	0	0		4	
Scooters																		

Comments:

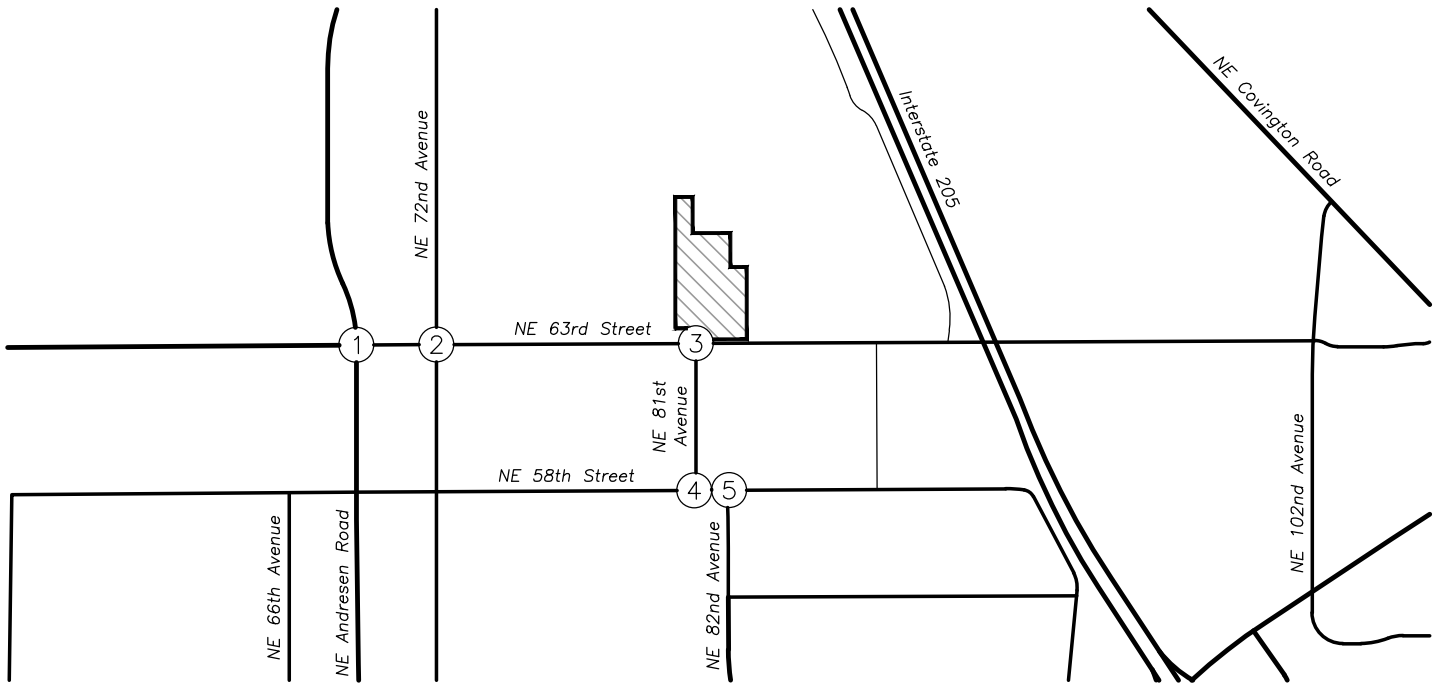
LOCATION: NE 82nd Ct/NE 82nd Ave -- NE 58th St
CITY/STATE: Vancouver, WA

QC JOB #: 16335708
DATE: Thu, Sep 21 2023

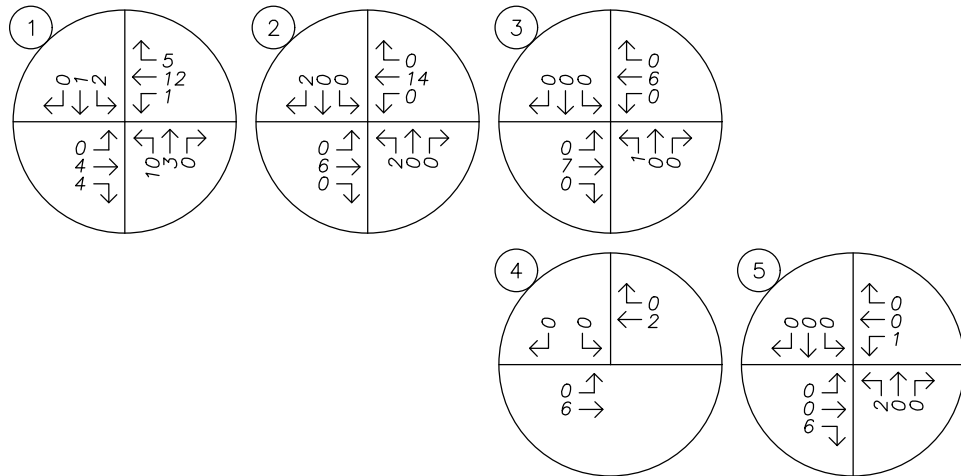


5-Min Count Period Beginning At	NE 82nd Ct/NE 82nd Ave (Northbound)				NE 82nd Ct/NE 82nd Ave (Southbound)				NE 58th St (Eastbound)				NE 58th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	1	5	0	0	0	0	0	0	2	0	0	5	1	0	0	24	
4:05 PM	11	0	9	0	0	0	0	0	0	2	6	0	6	1	1	0	36	
4:10 PM	10	0	10	0	0	0	0	0	0	2	15	0	6	1	0	0	44	
4:15 PM	7	1	12	0	0	1	0	0	0	0	8	0	5	0	0	0	34	
4:20 PM	10	0	10	0	0	0	0	0	0	1	6	0	8	0	0	0	35	
4:25 PM	8	2	4	0	0	0	0	0	0	1	5	0	6	2	0	0	28	
4:30 PM	11	0	14	0	0	1	0	0	0	2	10	0	9	2	0	0	49	
4:35 PM	11	0	11	0	0	0	0	0	0	1	8	0	5	0	0	0	36	
4:40 PM	15	0	11	0	0	0	0	0	0	2	16	0	4	1	0	0	49	
4:45 PM	8	0	8	0	0	1	0	0	0	4	11	0	9	3	0	0	44	
4:50 PM	15	1	10	0	0	0	0	0	0	1	6	0	10	1	0	0	44	
4:55 PM	16	0	11	0	0	0	0	0	0	1	3	0	5	0	0	0	36	459
5:00 PM	9	0	9	0	0	0	0	0	0	1	9	0	2	1	0	0	31	466
5:05 PM	12	0	8	0	0	0	0	0	0	0	7	0	12	3	0	0	42	472
5:10 PM	10	0	12	0	0	0	0	0	0	2	9	0	4	2	0	0	39	467
5:15 PM	5	0	5	0	0	0	0	0	0	0	13	0	7	0	0	0	30	463
5:20 PM	9	0	7	0	0	1	0	0	0	5	9	0	2	0	0	0	33	461
5:25 PM	11	0	12	0	0	0	0	0	0	2	9	0	1	0	0	0	35	468
5:30 PM	9	2	7	0	0	0	1	0	1	2	6	0	4	2	0	0	34	453
5:35 PM	10	0	6	0	0	0	0	0	0	0	7	0	5	4	0	0	32	449
5:40 PM	9	1	9	0	1	0	0	0	0	4	12	0	3	0	0	0	39	439
5:45 PM	15	1	10	0	0	0	0	0	0	1	14	0	5	2	0	0	48	443
5:50 PM	7	0	10	0	0	0	0	0	0	2	7	0	8	0	0	0	34	433
5:55 PM	8	0	6	0	0	0	0	0	0	3	4	0	9	2	0	0	32	429
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	152	4	116	0	0	4	0	0	0	28	132	0	92	20	0	0	548	
Heavy Trucks	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	8	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

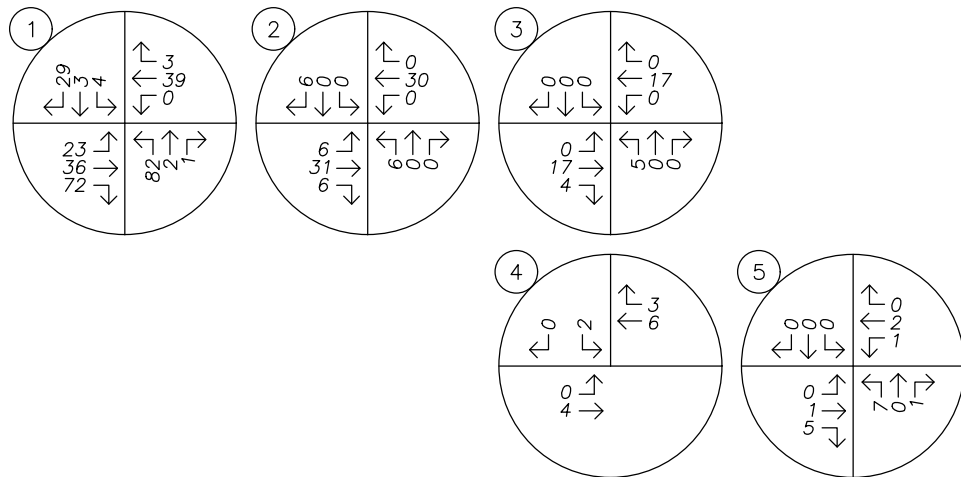
Comments:



AM PEAK HOUR



PM PEAK HOUR



no scale

Appendix C – Safety Analysis

Crash History Data

Left-Turn Lane Warrants

Traffic Signal Warrant Analysis



OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ Andresen Rd

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# I N J	# F A T	# V E H	# P E D S	# B I K E S	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM
City Street	Clark	Vancouver	NE 63RD ST	6800	NE ANDRESEN RD							No	EB25848	04/11/2021	07:29	No Apparent Injury	0	0	2	0	0	Passenger Car	Passenger Car	At Intersection and Related	Clear	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	East
City Street	Clark	Vancouver	NE 63RD ST	6800	NE ANDRESEN RD							No	ED00165	11/03/2022	10:04	No Apparent Injury	0	0	3	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Overcast	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	West
City Street	Clark	Vancouver	NE 63RD ST	6300	NE ANDRESEN RD							No	EA10409	01/13/2020	08:55	Possible Injury	1	0	2	0	0	Passenger Car	Passenger Car	At Intersection and Related	Raining	Wet	Daylight	Entering at angle	Making Right Turn	Going Straight Ahead	West
City Street	Clark	Vancouver	NE 63RD ST	6800	NE ANDRESEN RD							No	EB39975	06/16/2021	14:06	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Slowing	Stopped at Signal or Stop Sign	East
City Street	Clark	Vancouver	NE 63RD ST	0	NE ANDRESEN RD							No	E831660	08/25/2018	07:18	Possible Injury	3	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	East
City Street	Clark	Vancouver	NE 63RD ST	3800		76	F	E	NE ANDRESEN RD			No	EA00852	01/05/2020	17:38	No Apparent Injury	0	0	3	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Intersection Related but Not at Intersection	Raining	Wet	Dark-Street Lights On	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	East
City Street	Clark	Vancouver	NE ANDRESEN RD	0	NE 63RD ST							No	E899470	03/05/2019	07:21	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	South
City Street	Clark	Vancouver	NE ANDRESEN RD	9900	NE 63RD ST							No	EB06270	02/13/2021	19:11	Suspected Serious Injury	2	0	2	0	0	Passenger Car	Passenger Car	At Intersection and Related	Snowing	Snow/Slush	Dark-Street Lights On	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	South
City Street	Clark	Vancouver	NE ANDRESEN RD	6322	NE 63RD ST							No	EB81038	10/23/2021	16:59	No Apparent Injury	0	0	2	0	0	Passenger Car	Passenger Car	At Intersection and Related	Raining	Wet	Daylight	From same direction - both going straight - both moving - rear-end	Slowing	Slowing	North
City Street	Clark	Vancouver	NE ANDRESEN RD	0	NE 63RD ST							No	E988842	12/02/2019	10:52	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	North
City Street	Clark	Vancouver	NE ANDRESEN RD	6322	NE 63RD ST							No	EC60533	06/29/2022	17:36	Suspected Minor Injury	1	0	2	0	0	Motorcycle	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear	Dry	Daylight	From same direction - both going straight - both moving - rear-end	Changing Lanes	Going Straight Ahead	North
City Street	Clark	Vancouver	NE ANDRESEN RD	6322	NE 63RD ST							No	EA81038	11/12/2020	21:17	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Raining	Wet	Dark-Street Lights On	Entering at angle	Slowing	Going Straight Ahead	South

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ Andresen Rd

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD	
West	North	South	Disregard Traffic Sign and Signals			None													Lane of Primary Trafficway	1102993.39	129181.77
East	North	South	Disregard Traffic Sign and Signals			None													Lane of Primary Trafficway	1102993.39	129181.77
South	North	South	Did Not Grant RW to Vehicle	Overcorrecting / Oversteering		None													Intersecting Trafficway	1102991.02	129114.59
West	Vehicle Stopped	Vehicle Stopped	Other Distractions			None													Lane of Primary Trafficway	1102993.39	129181.77
West	South	North	Did Not Grant RW to Vehicle			Driver Not Distracted													Lane of Primary Trafficway	1102993.55	129182.15
West	Vehicle Stopped	Vehicle Stopped	Unknown Distraction			None													Lane of Primary Trafficway	1103069.46	129183.29
North	Vehicle Stopped	Vehicle Stopped	Inattention			None													Lane of Primary Trafficway	1102993.55	129182.15
North	South	North	Exceeding Reas. Safe Speed			None													Lane of Primary Trafficway	1103028.08	129183.02
South	North	South	Eating or Drinking			None													Lane of Primary Trafficway	1102993.39	129181.77
South	North	South	Apparently Fatigued			None													Lane of Primary Trafficway	1102993.55	129182.14
South	North	South	Improper Turn/Merge			None													Lane of Primary Trafficway	1102993.39	129181.77
North	East	West	Other Contributing Circ Not Listed			None													Lane of Primary Trafficway	1102993.39	129181.77

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ Andresen Rd

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# IN J	# F A T	# V E H	# P E D S	# B I K E S	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM
City Street	Clark	Vancouver	NE ANDRESEN RD	6322	NE 63RD ST							No	EB96039	11/19/2021	19:17	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Dusk	From same direction - both going straight - one stopped - rear-end	Slowing	Stopped at Signal or Stop Sign	South
City Street	Clark	Vancouver	NE ANDRESEN RD	0	NE 63RD ST							No	E966580	09/05/2019	05:16	Suspected Minor Injury	1	0	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb		At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	Vehicle going straight hits pedestrian	Going Straight Ahead		North
City Street	Clark	Vancouver	NE ANDRESEN RD	9900	NE 63RD ST							No	EA40938	06/17/2020	08:01	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	South
City Street	Clark	Vancouver	NE ANDRESEN RD	6322	NE 63RD ST							No	EC77399	08/19/2022	16:13	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	East
City Street	Clark	Vancouver	NE ANDRESEN RD	6300		77	F	N	NE 63RD ST			No	E966942	10/02/2019	11:27	No Apparent Injury	0	0	3	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Intersection Related but Not at Intersection	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	North
City Street	Clark	Vancouver	NE ANDRESEN RD	6300		178	F	N	NE 63RD ST			No	E862950	11/20/2018	16:50	No Apparent Injury	0	0	3	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	Intersection Related but Not at Intersection	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	North

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ Andresen Rd

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD	
North	Vehicle Stopped	Vehicle Stopped	Unknown Distraction			None													Lane of Primary Trafficway	1102993.39	129181.77
South			None													Did Not Grant RW to Vehicle			Lane of Primary Trafficway	1102993.55	129182.15
North	Vehicle Stopped	Vehicle Stopped	Unknown Distraction			None													Lane of Primary Trafficway	1103028.09	129183.41
West	South	North	Disregard Traffic Sign and Signals			None													Lane of Primary Trafficway	1102993.39	129181.77
West	North	West	Inattention			None													Lane of Primary Trafficway	1102994.89	129262.10
South	Vehicle Stopped	Vehicle Stopped	Driver Not Distracted			Driver Not Distracted													Lane of Primary Trafficway	1102991.11	129362.78

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ 72nd Ave

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FATAL	# VEH	# PEDS	# BIKES	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM
City Street	Clark	Vancouver	NE 63RD ST	0	NE 72ND AVE							No	EA42497	06/23/2020	14:13	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	Clear	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	South
City Street	Clark	Vancouver	NE 63RD ST	6200	NE 72ND AVE							No	EB64534	09/02/2021	13:50	Suspected Minor Injury	1	0	1	1	0	Passenger Car		At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Vehicle turning left hits pedestrian	Making Left Turn		East
City Street	Clark	Vancouver	NE 63RD ST	7200	NE 72ND AVE							No	EB67848	09/15/2021	10:56	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	West
City Street	Clark	Vancouver	NE 63RD ST	0	NE 72ND AVE							No	E996756	12/22/2019	12:45	Possible Injury	1	0	2	0	0	Passenger Car	Passenger Car	At Intersection and Related	Overcast	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	East
City Street	Clark	Vancouver	NE 63RD ST	0	NE 72ND AVE							No	EA21785	03/08/2020	13:42	Suspected Minor Injury	1	0	2	0	0	Passenger Car	Passenger Car	At Intersection and Related	Clear	Dry	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	West
City Street	Clark	Vancouver	NE 63RD ST	0	NE 72ND AVE							No	E767024	02/01/2018	14:13	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Raining	Wet	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Going Straight Ahead	East
City Street	Clark	Vancouver	NE 63RD ST	7200	NE 72ND AVE							No	EC13145	01/16/2022	18:14	Possible Injury	1	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Overcast	Dry	Dark-Street Lights On	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	East
City Street	Clark	Vancouver	NE 63RD ST	0	NE 72ND AVE							No	E851908	08/03/2018	18:23	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	East
City Street	Clark	Vancouver	NE 63RD ST	7100		78	F	W	NE 72ND AVE			No	EA26252	03/24/2020	14:37	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Intersection Related but Not at Intersection	Overcast	Dry	Daylight	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	West
City Street	Clark	Vancouver	NE 72ND AVE	0	NE 63RD ST							No	E995924	12/20/2019	13:54	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Raining	Wet	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South
City Street	Clark	Vancouver	NE 72ND AVE	6300	NE 63RD ST							No	EA72617	10/15/2020	19:15	Suspected Minor Injury	1	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North
City Street	Clark	Vancouver	NE 72ND AVE	0	NE 63RD ST							No	E808653	06/14/2018	19:43	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ 72nd Ave

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD	
North	East	West	Under Influence of Alcohol	Exceeding Stated Speed Limit	Disregard Traffic Sign and Signals	None													Lane of Primary Trafficway	1103729.85	129181.69
South			Did Not Grant R/W to Non Motorist	Lost in Thought / Day Dreaming											None				Intersecting Trafficway	1103715.24	129121.16
East	Vehicle Stopped	Vehicle Stopped	Unknown Distraction			None													Lane of Primary Trafficway	1103729.99	129181.85
West	South	North	Disregard Stop and Go Light			None													Lane of Primary Trafficway	1103729.85	129181.69
North	East	West	Disregard Traffic Sign and Signals			None													Lane of Primary Trafficway	1103729.85	129181.69
West	North	South	Inattention			None													Lane of Primary Trafficway	1103729.85	129181.68
South	West	East	Did Not Grant RW to Vehicle			None													Lane of Primary Trafficway	1103729.99	129181.85
West	Vehicle Stopped	Vehicle Stopped	Under Influence of Alcohol			None													Lane of Primary Trafficway	1103729.85	129181.68
East	West	East	Did Not Grant RW to Vehicle			None													Lane of Primary Trafficway	1103651.12	129181.85
West	North	South	Inattention			None													Lane of Primary Trafficway	1103729.85	129181.69
East	South	North	Under Influence of Alcohol			None													Lane of Primary Trafficway	1103729.85	129181.69
West	North	South	Did Not Grant RW to Vehicle			Driver Not Distracted													Lane of Primary Trafficway	1103729.85	129181.68

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ 72nd Ave

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# IN J	# F A T	# V E H	# P E D S	# B I K E S	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM
City Street	Clark	Vancouver	NE 72ND AVE	6300	NE 63RD ST							No	EC77564	08/24/2022	18:22	No Apparent Injury	0	0	2	0	0	Truck (Flatbad,Van,etc)	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	South
City Street	Clark	Vancouver	NE 72ND AVE	6300	NE 63RD ST							No	EC19782	01/31/2022	11:32	No Apparent Injury	0	0	1	0	0	Pickup,Panel Truck or Vanette under 10,000 lb		At Intersection and Related	Clear	Wet	Daylight	Fence	Making Left Turn		North
City Street	Clark	Vancouver	NE 72ND AVE	6300	NE 63RD ST							No	EB14349	03/14/2021	20:22	No Apparent Injury	0	0	2	0	0	Passenger Car	Passenger Car	At Intersection and Related	Raining	Wet	Dark-Street Lights On	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

63rd St @ 72nd Ave

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD
North	East	West	Disregard Traffic Sign and Signals			None												Lane of Primary Trafficway	1103729.99	129181.85
East			Improper Turn/Merge															Intersecting Trafficway	1103729.99	129181.85
East	South	North	Distracted by Other Occupant			None												Lane of Primary Trafficway	1103729.99	129181.85

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

58th St @ 81st Ave

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# IN J	# F A T	# V E H	# P E D S	# B I K E S	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM
City Street	Clark	Vancouver	NE 58TH ST	8100	NE 81ST AVE							No	EB11988	03/05/2021	03:50	No Apparent Injury	0	0	3	0	0	Passenger Car	Passenger Car	At Intersection and Related	Overcast	Wet	Dark-Street Lights On	One parked--one moving	Other*	Legally Parked, Unoccupied	
City Street	Clark	Vancouver	NE 81ST AVE	0	NE 58TH ST							No	EA27713	04/05/2020	01:27	No Apparent Injury	0	0	1	0	0	Passenger Car		At Intersection and Related	Clear	Wet	Dark-Street Lights On	Tree or Stump (stationary)	Making Left Turn		North

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

58th St @ 81st Ave

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD
			Other Contributing Circ Not Listed			None												Outside Shoulder of Primary Trafficway	1106028.78	127807.53
East			Other Contributing Circ Not Listed															Past the Outside Shoulder of Primary Trafficway	1106028.28	127807.19

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

58th St @ 82nd Ave / 82nd Ct

63rd St @ 81st Ave - No Reported Crashes

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# I N J	# F A T	# V E H	# P E D S	# B I K E S	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM
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OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF VANCOUVER

01/01/2018 - 12/31/2022 See 2nd tab below for road info

INTERSECTIONS

58th St @ 82nd Ave / 82nd Ct

63rd St @ 81st Ave - No Reported Crashes

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD
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Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 3. NE 63rd Street at NE 81st Avenue
Date: 11/12/2023
Scenario: 2031 Future Conditions with Proposed Zone - AM Peak Hour (EB)

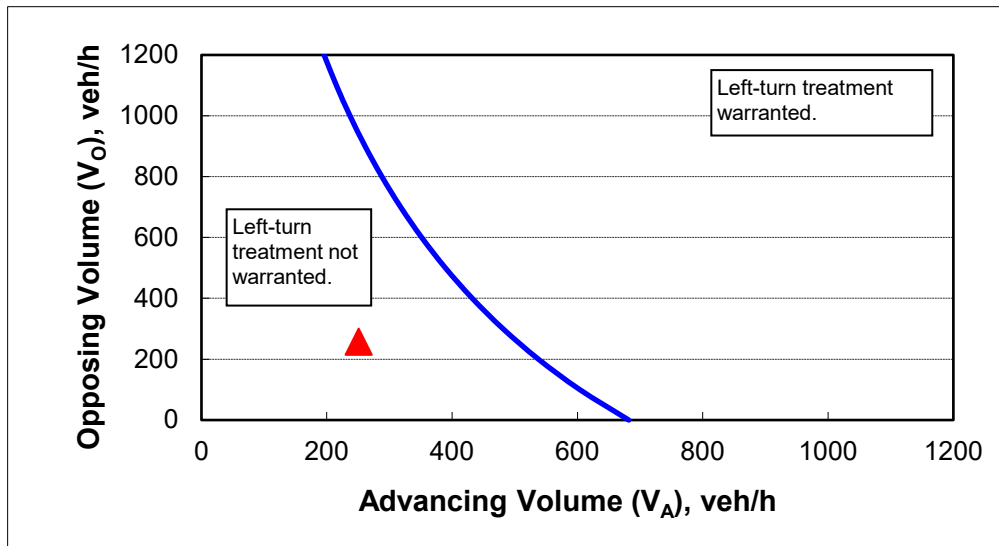
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	8%
Advancing volume (V_A), veh/h:	251
Opposing volume (V_O), veh/h:	257

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	505
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 3. NE 63rd Street at NE 81st Avenue
Date: 11/12/2023
Scenario: 2026 Buildout Conditions with Proposed Zone - PM Peak Hour (EB)

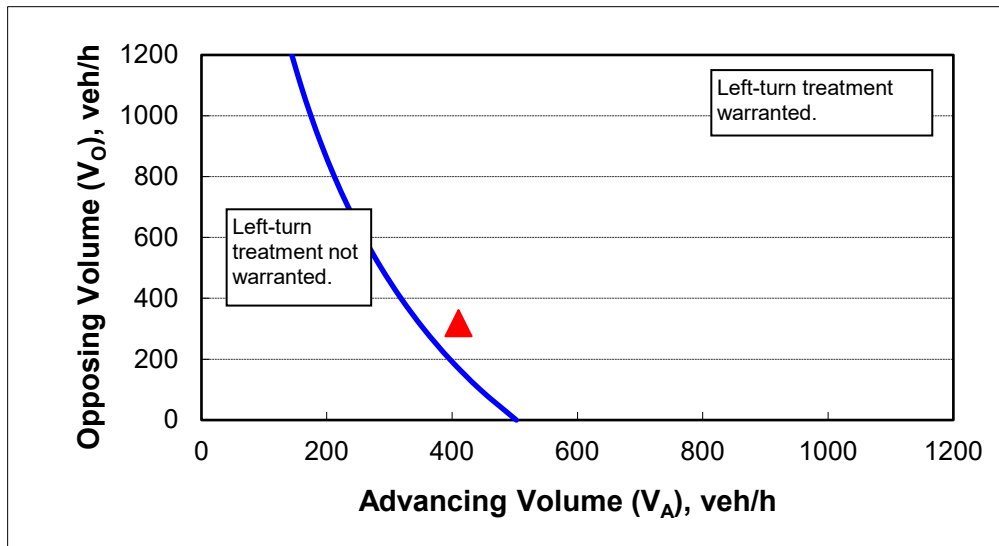
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	16%
Advancing volume (V_A), veh/h:	410
Opposing volume (V_O), veh/h:	319

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	347
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 4. NE 58th Street at NE 81st Avenue
Date: 11/12/2023
Scenario: 2031 Future Conditions with Proposed Zone - AM Peak Hour (EB)

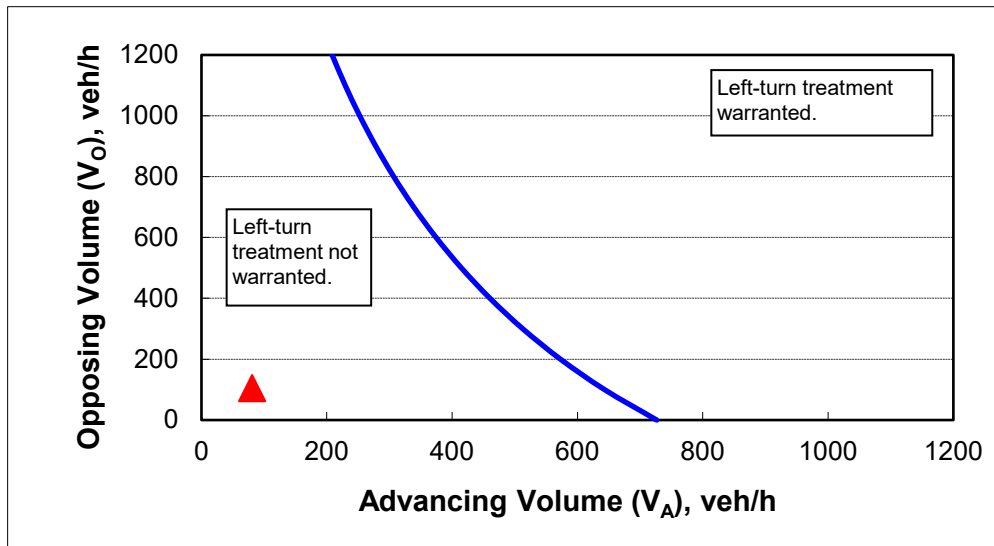
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	9%
Advancing volume (V_A), veh/h:	81
Opposing volume (V_O), veh/h:	105

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	640
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 4. NE 58th Street at NE 81st Avenue
Date: 11/12/2023
Scenario: 2031 Future Conditions with Proposed Zone - PM Peak Hour (EB)

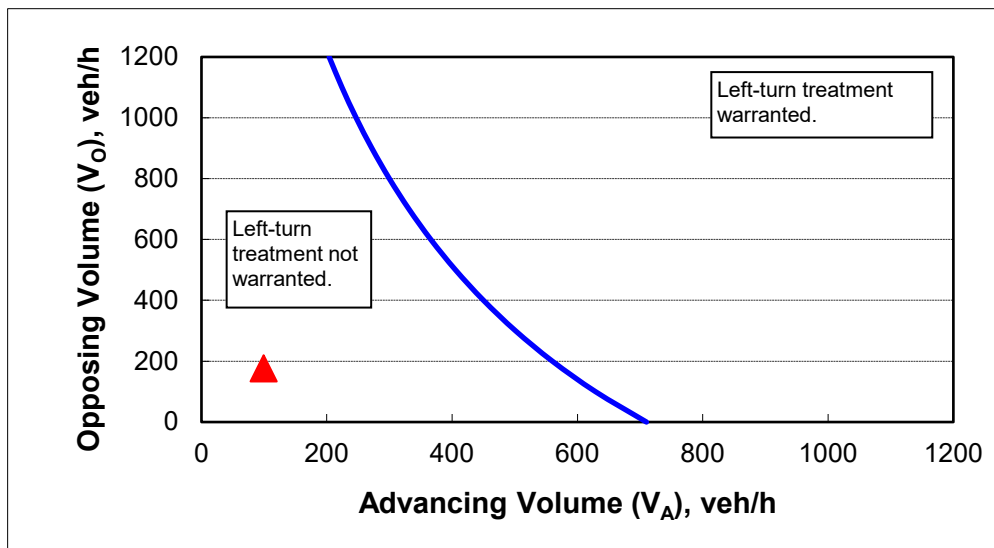
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	9%
Advancing volume (V_A), veh/h:	99
Opposing volume (V_O), veh/h:	177

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	575
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 5. NE 58th Street at NE 82nd Avenue
Date: 11/12/2023
Scenario: 2031 Future Conditions with Proposed Zone - AM Peak Hour (EB)

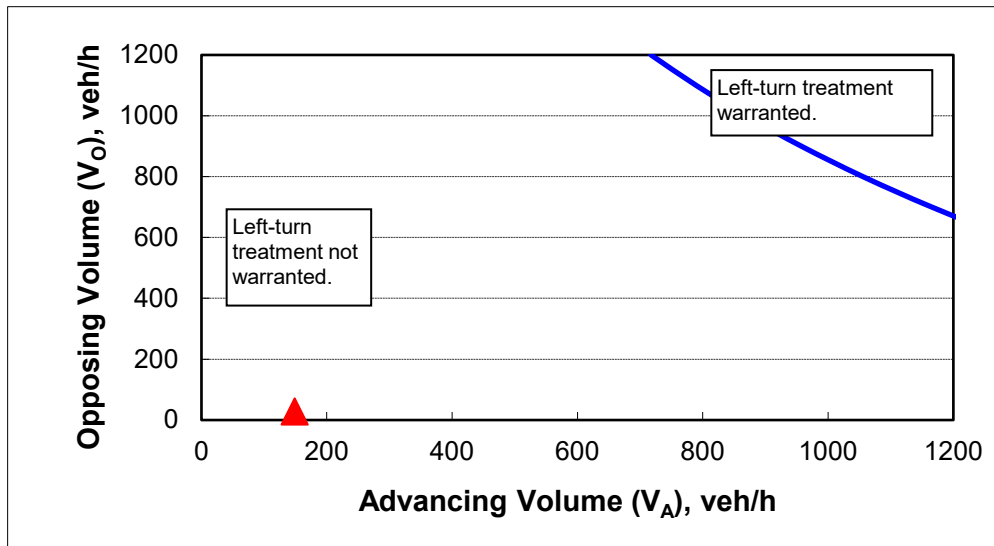
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	149
Opposing volume (V_O), veh/h:	28

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	2415
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 5. NE 58th Street at NE 82nd Avenue
Date: 11/12/2023
Scenario: 2031 Future Conditions with Proposed Zone - AM Peak Hour (WB)

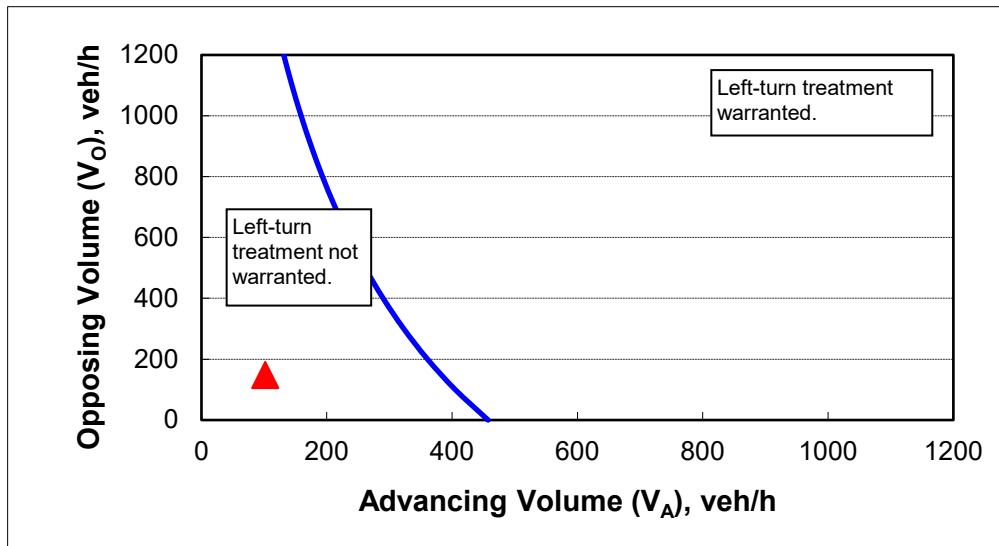
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	73%
Advancing volume (V_A), veh/h:	102
Opposing volume (V_O), veh/h:	148

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	383
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 5. NE 58th Street at NE 82nd Avenue
Date: 11/12/2023
Scenario: 2031 Future Conditions with Proposed Zone - PM Peak Hour (EB)

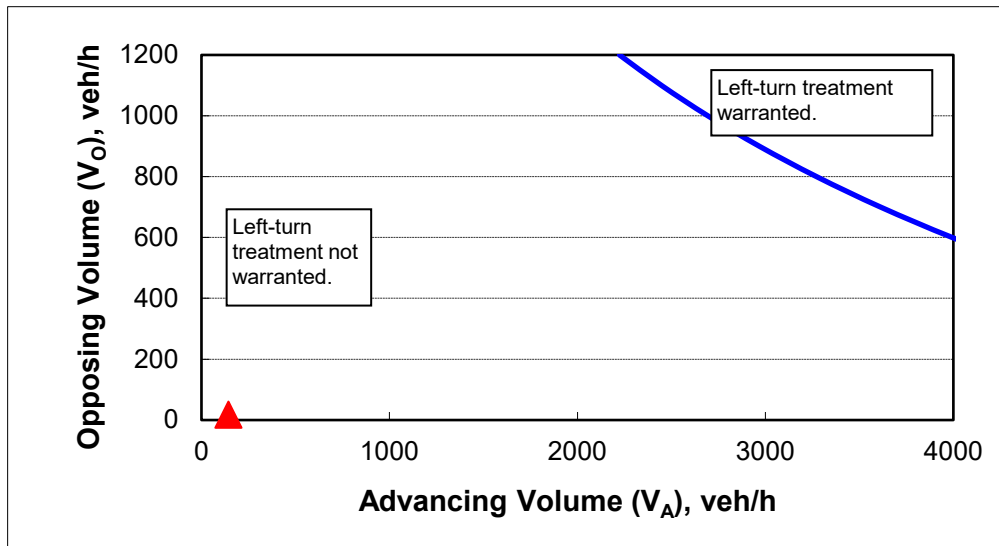
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	144
Opposing volume (V_O), veh/h:	18

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	7578
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
Intersection: 5. NE 58th Street at NE 82nd Avenue
Date: 11/12/2023
Scenario: 2031 Future Conditions with Proposed Zone - PM Peak Hour (WB)

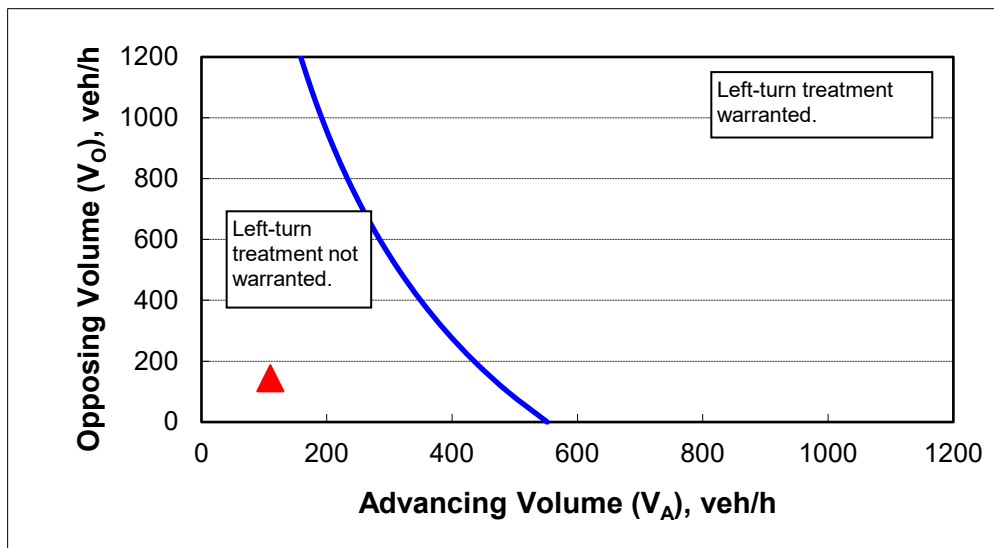
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	84%
Advancing volume (V_A), veh/h:	110
Opposing volume (V_O), veh/h:	144

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	464
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



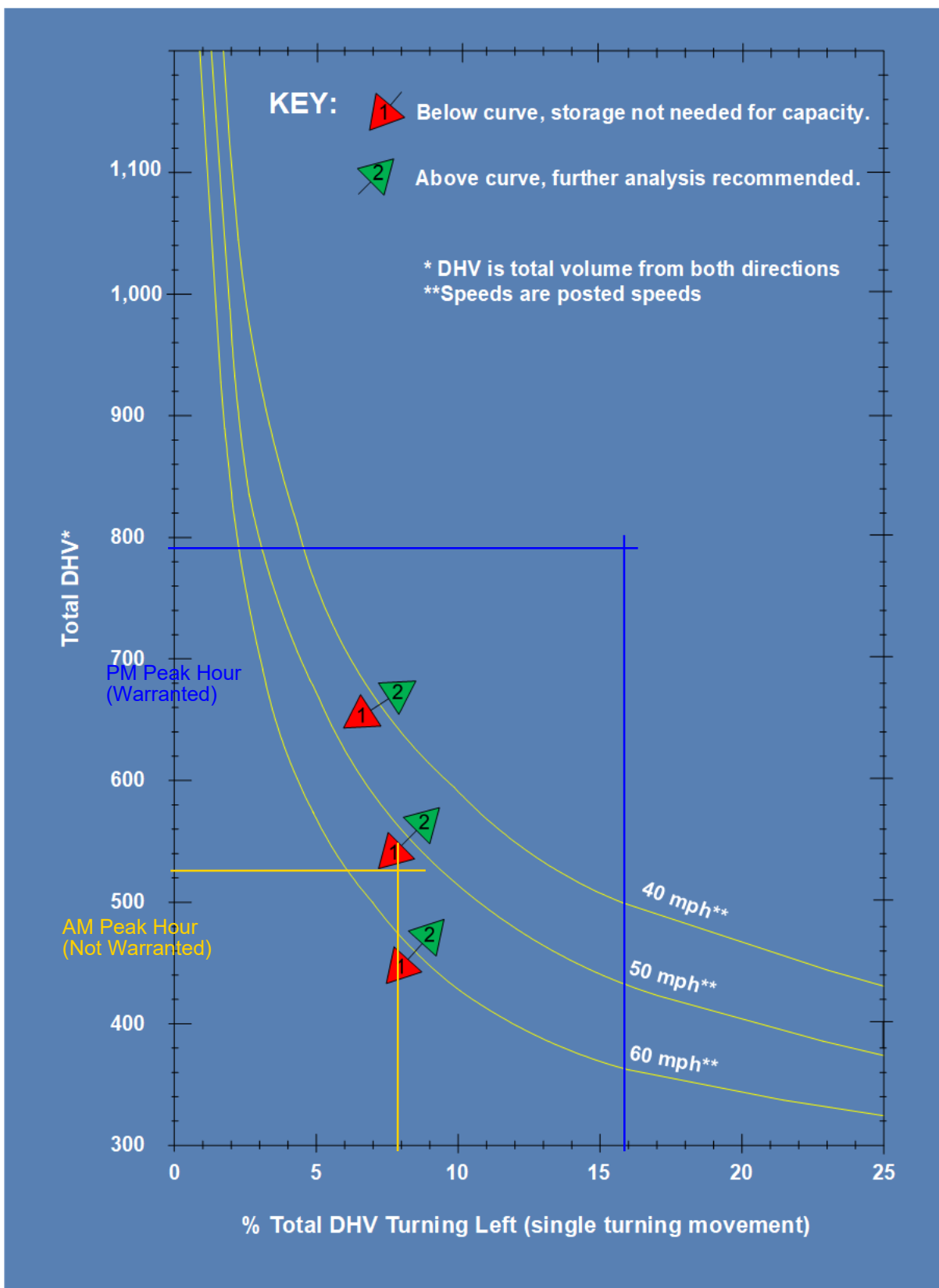
CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

3. NE 63rd Street at NE 81st Avenue (2031 with Zone Change)

Chapter 1310

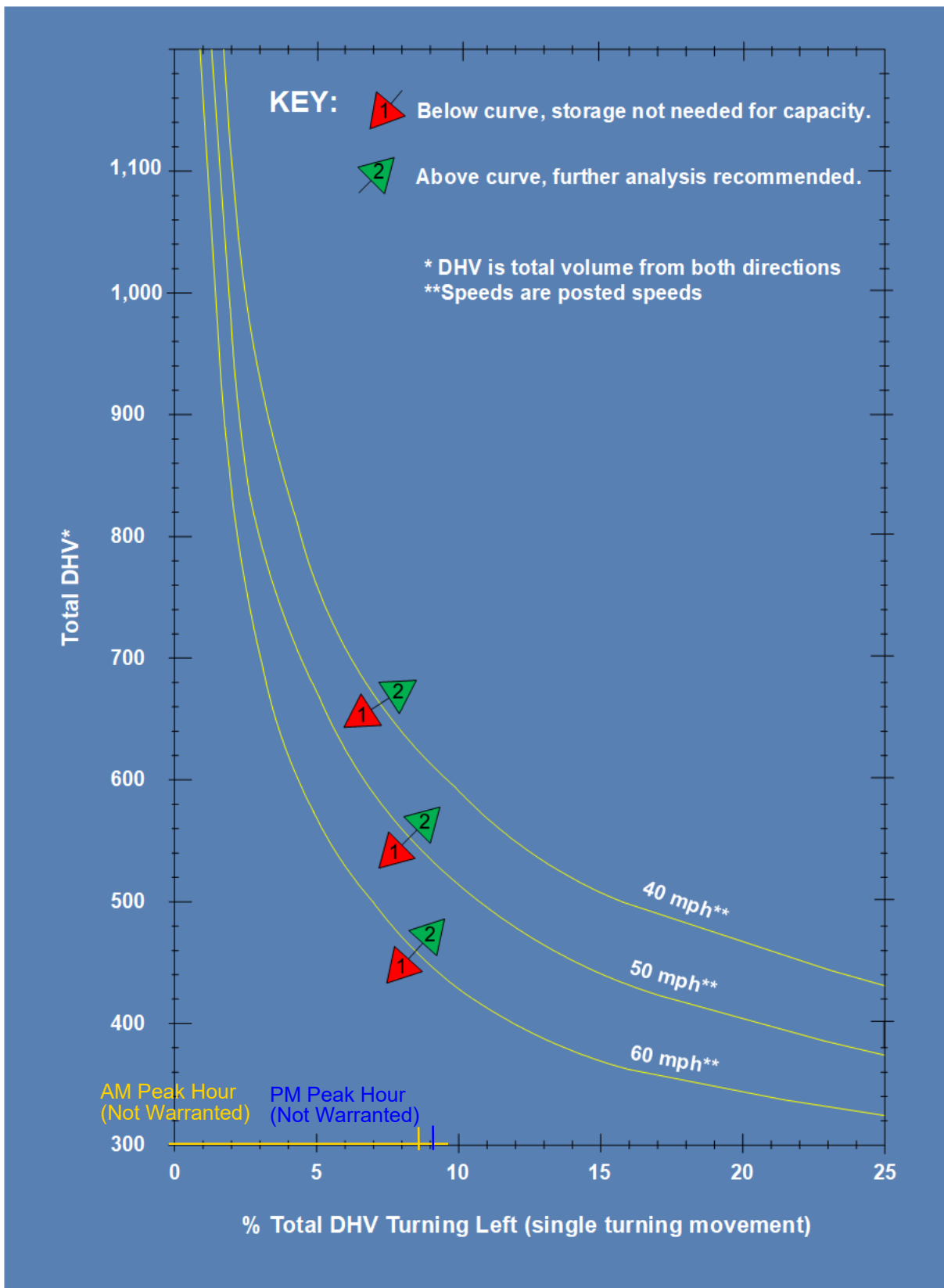
Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized



4. NE 58th Street at NE 81st Avenue (2031 with Zone Change)

Chapter 1310

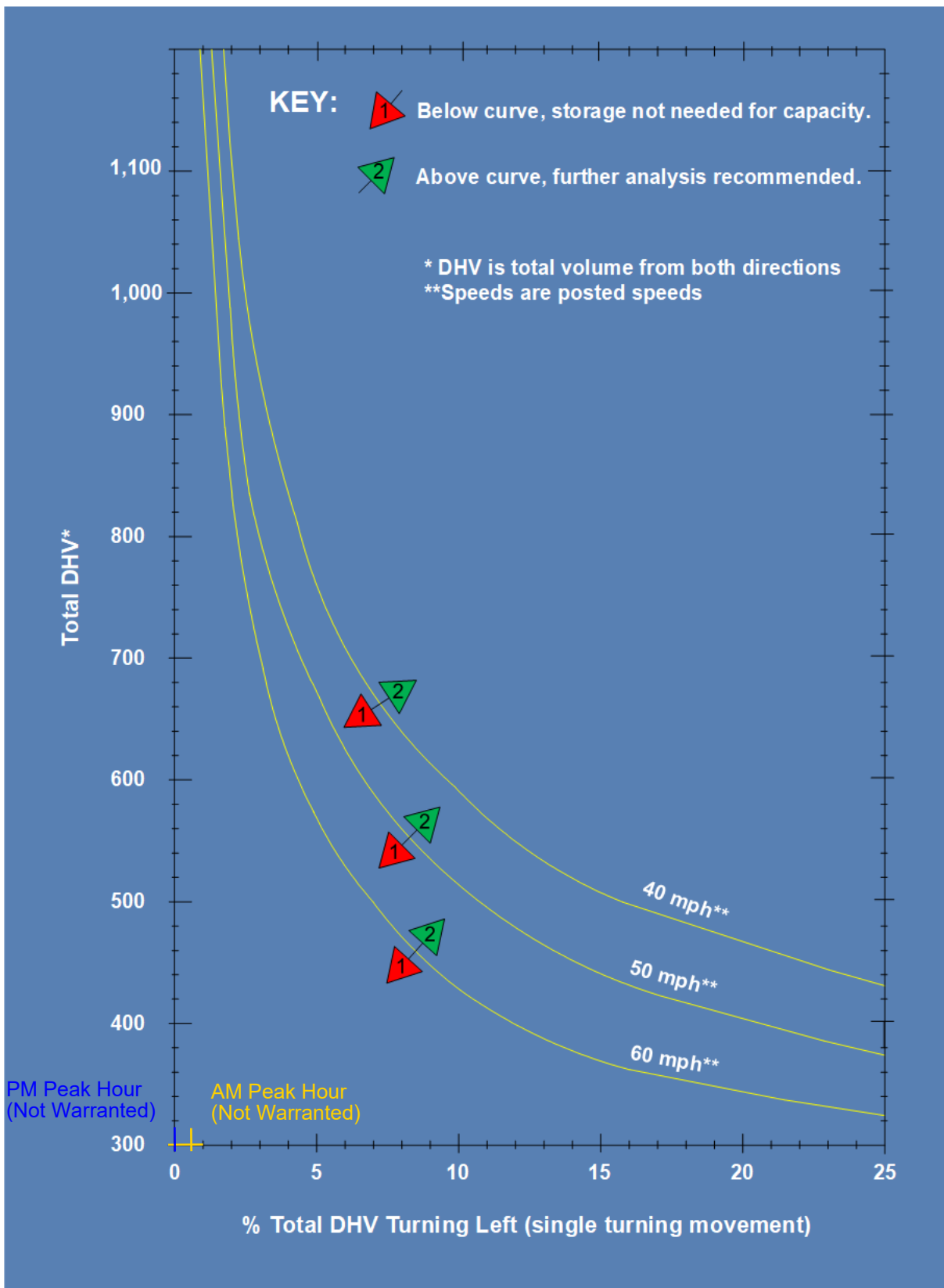
Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized



5. NE 58th Street at NE 82nd Avenue (EB)
(2031 with Zone Change)

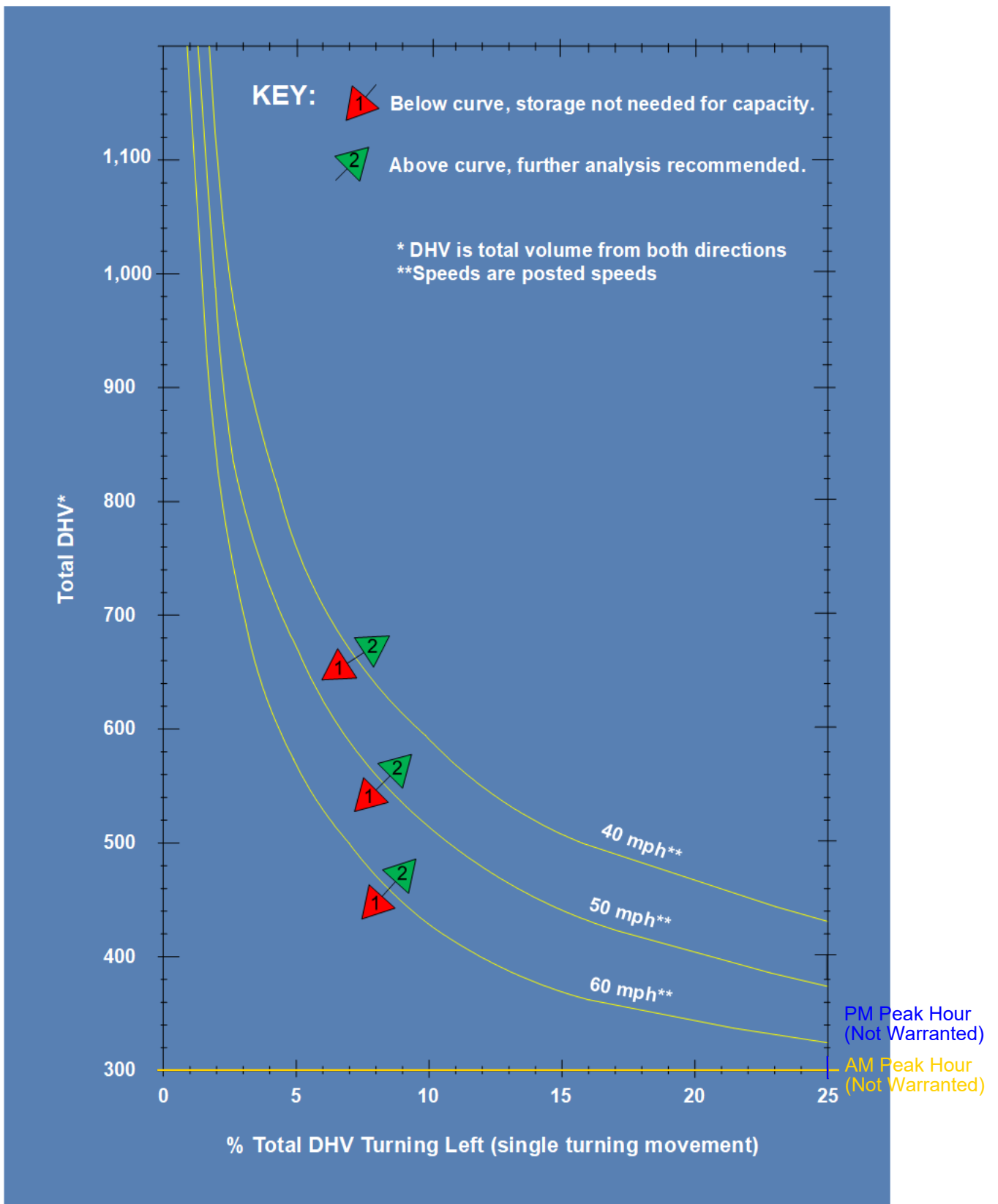
Chapter 1310

Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized



Chapter 1310

Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized



Traffic Signal Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
 Date: 11/12/2023
 Scenario: 2031 Future Conditions with Proposed Zones

Major Street:	NE 63rd Street	Minor Street:	NE 81st Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	793	PM Peak Hour Volumes:	64

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	7,930	8,850	
Minor Street*	640	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	7,930	13,300	
Minor Street*	640	1,350	No
<i>Combination Warrant</i>			
Major Street	7,930	10,640	
Minor Street*	640	2,120	No

Note: Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
 Date: 11/12/2023
 Scenario: 2031 Future Conditions with Proposed Zones

Major Street:	NE 58th Street	Minor Street:	NE 81st Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	276	PM Peak Hour Volumes:	76

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess
 of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	2,760	8,850	
Minor Street*	760	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,760	13,300	
Minor Street*	760	1,350	No
<i>Combination Warrant</i>			
Major Street	2,760	10,640	
Minor Street*	760	2,120	No

Note: Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: Wood Duck Springs CP/Zone Map Change
 Date: 11/12/2023
 Scenario: 2031 Future Conditions with Proposed Zones

Major Street:	NE 58th Street	Minor Street:	NE 82nd Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	254	PM Peak Hour Volumes:	266

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess
 of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	2,540	8,850	
Minor Street*	2,660	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	2,540	13,300	
Minor Street*	2,660	1,350	No
Combination Warrant			
Major Street	2,540	10,640	
Minor Street*	2,660	2,120	No

Note: Minor street right-turning traffic volumes reduced by 25%.

Appendix D – Operation Analysis

Level of Service Descriptions

Capacity Reports





LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



*LEVEL OF SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

*LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	147	165	129	175	63	151	376	53	40	544	94
Future Volume (vph)	92	147	165	129	175	63	151	376	53	40	544	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.96		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1656	3023		1719	3302		1736	3401		1703	3330	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1656	3023		1719	3302		1736	3401		1703	3330	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	160	179	140	190	68	164	409	58	43	591	102
RTOR Reduction (vph)	0	146	0	0	53	0	0	13	0	0	19	0
Lane Group Flow (vph)	100	193	0	140	205	0	164	454	0	43	674	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.4	13.0		8.9	15.5		12.3	27.2		4.9	19.8	
Effective Green, g (s)	6.4	13.0		8.9	15.5		12.3	27.2		4.9	19.8	
Actuated g/C Ratio	0.09	0.19		0.13	0.22		0.18	0.39		0.07	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	561		218	731		305	1321		119	941	
v/s Ratio Prot	0.06	c0.06		c0.08	0.06		c0.09	0.13		0.03	c0.20	
v/s Ratio Perm												
v/c Ratio	0.66	0.34		0.64	0.28		0.54	0.34		0.36	0.72	
Uniform Delay, d1	30.8	24.8		29.0	22.6		26.3	15.1		31.1	22.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.4	1.7		6.3	1.0		1.8	0.2		1.9	2.6	
Delay (s)	41.2	26.5		35.4	23.6		28.1	15.3		32.9	25.2	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s)		29.8			27.7			18.6			25.6	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			24.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			61.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	92	147	165	129	175	63	151	376	53	40	544	94
Future Volume (veh/h)	92	147	165	129	175	63	151	376	53	40	544	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1767	1826	1826	1826	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	100	160	33	140	190	15	164	409	45	43	591	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	5	5	5	4	4	4	6	6	6
Cap, veh/h	126	897	180	175	1136	89	200	976	107	70	707	100
Arrive On Green	0.07	0.32	0.32	0.10	0.35	0.35	0.11	0.31	0.31	0.04	0.23	0.23
Sat Flow, veh/h	1682	2776	559	1739	3259	255	1753	3174	347	1725	3025	429
Grp Volume(v), veh/h	100	95	98	140	100	105	164	224	230	43	336	339
Grp Sat Flow(s),veh/h/ln	1682	1678	1656	1739	1735	1779	1753	1749	1773	1725	1721	1734
Q Serve(g_s), s	4.1	2.8	3.0	5.5	2.8	2.8	6.4	7.1	7.2	1.7	13.0	13.1
Cycle Q Clear(g_c), s	4.1	2.8	3.0	5.5	2.8	2.8	6.4	7.1	7.2	1.7	13.0	13.1
Prop In Lane	1.00		0.34	1.00		0.14	1.00		0.20	1.00		0.25
Lane Grp Cap(c), veh/h	126	542	535	175	605	621	200	538	545	70	402	405
V/C Ratio(X)	0.79	0.18	0.18	0.80	0.17	0.17	0.82	0.42	0.42	0.62	0.83	0.84
Avail Cap(c_a), veh/h	168	542	535	199	605	621	200	538	545	150	455	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	17.0	17.0	30.8	15.8	15.8	30.3	19.3	19.3	33.0	25.5	25.6
Incr Delay (d2), s/veh	17.0	0.7	0.8	17.7	0.6	0.6	22.7	0.5	0.5	8.5	11.5	11.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.1	1.1	3.0	1.1	1.2	3.8	2.7	2.8	0.8	6.1	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	17.7	17.8	48.5	16.3	16.3	53.0	19.8	19.8	41.6	37.1	37.3
LnGrp LOS	D	B	B	D	B	B	D	B	B	D	D	D
Approach Vol, veh/h	293			345			618			718		
Approach Delay, s/veh	28.4			29.4			28.6			37.5		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	26.6	12.0	20.4	9.2	28.4	6.8	25.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	8.0	19.5	8.0	18.5	7.0	20.5	6.1	20.4				
Max Q Clear Time (g_c+I1), s	7.5	5.0	8.4	15.1	6.1	4.8	3.7	9.2				
Green Ext Time (p_c), s	0.0	0.8	0.0	1.3	0.0	0.9	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay	31.9											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	122	49	48	220	19	113	56	62	16	76	61
Future Volume (vph)	35	122	49	48	220	19	113	56	62	16	76	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1699	1792	1490	1701	1767		1669	1590		1670	1647	
Flt Permitted	0.60	1.00	1.00	0.65	1.00		0.64	1.00		0.67	1.00	
Satd. Flow (perm)	1071	1792	1490	1157	1767		1127	1590		1187	1647	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	133	53	52	239	21	123	61	67	17	83	66
RTOR Reduction (vph)	0	0	24	0	4	0	0	54	0	0	53	0
Lane Group Flow (vph)	38	133	29	52	256	0	123	74	0	17	96	0
Confl. Peds. (#/hr)	3		1	1		3	2		7	7		2
Confl. Bikes (#/hr)			1						3			
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	35.0	32.3	32.3	37.6	33.6		11.7	11.7		11.7	11.7	
Effective Green, g (s)	35.0	32.3	32.3	37.6	33.6		11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.58	0.54	0.54	0.63	0.56		0.19	0.19		0.19	0.19	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	653	964	802	761	989		219	310		231	321	
v/s Ratio Prot	0.00	0.07		c0.00	c0.15			0.05			0.06	
v/s Ratio Perm	0.03		0.02	0.04			c0.11			0.01		
v/c Ratio	0.06	0.14	0.04	0.07	0.26		0.56	0.24		0.07	0.30	
Uniform Delay, d1	5.3	6.9	6.5	4.3	6.8		21.8	20.4		19.7	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3	0.1	0.0	0.1		3.3	0.4		0.1	0.5	
Delay (s)	5.4	7.2	6.6	4.4	6.9		25.1	20.8		19.9	21.2	
Level of Service	A		A	A	A		C	C		B	C	
Approach Delay (s)		6.8			6.5			22.9			21.0	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			13.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			47.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	122	49	48	220	19	113	56	62	16	76	61
Future Volume (veh/h)	35	122	49	48	220	19	113	56	62	16	76	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1781	1781	1781	1796	1796	1796
Adj Flow Rate, veh/h	38	133	29	52	239	17	123	61	13	17	83	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	8	8	8	7	7	7
Cap, veh/h	721	1005	832	818	942	67	303	279	59	323	298	47
Arrive On Green	0.04	0.55	0.55	0.05	0.56	0.56	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1725	1811	1499	1725	1670	119	1221	1416	302	1262	1512	237
Grp Volume(v), veh/h	38	133	29	52	0	256	123	0	74	17	0	96
Grp Sat Flow(s),veh/h/ln	1725	1811	1499	1725	0	1789	1221	0	1718	1262	0	1749
Q Serve(g_s), s	0.5	2.1	0.5	0.7	0.0	4.4	5.7	0.0	2.2	0.7	0.0	2.8
Cycle Q Clear(g_c), s	0.5	2.1	0.5	0.7	0.0	4.4	8.5	0.0	2.2	2.9	0.0	2.8
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.18	1.00		0.14
Lane Grp Cap(c), veh/h	721	1005	832	818	0	1009	303	0	338	323	0	344
V/C Ratio(X)	0.05	0.13	0.03	0.06	0.00	0.25	0.41	0.00	0.22	0.05	0.00	0.28
Avail Cap(c_a), veh/h	826	1005	832	907	0	1009	470	0	573	495	0	583
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.2	6.4	6.1	4.9	0.0	6.7	24.1	0.0	20.2	21.4	0.0	20.5
Incr Delay (d2), s/veh	0.0	0.2	0.1	0.0	0.0	0.1	0.9	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.7	0.1	0.2	0.0	1.3	1.6	0.0	0.8	0.2	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.2	6.7	6.1	4.9	0.0	6.8	25.0	0.0	20.5	21.5	0.0	20.9
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h	200			308			197			113		
Approach Delay, s/veh	6.3			6.5			23.3			21.0		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	37.3		15.8	6.3	37.8		15.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	22.0		20.0	6.0	22.0		20.0				
Max Q Clear Time (g_c+I1), s	2.7	4.1		10.5	2.5	6.4		4.9				
Green Ext Time (p_c), s	0.0	0.7		0.5	0.0	1.2		0.4				
Intersection Summary												
HCM 6th Ctrl Delay	12.5											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

10/16/2023

Intersection

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	162	37	14	213	33	9
Future Vol, veh/h	162	37	14	213	33	9
Conflicting Peds, #/hr	0	2	2	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	5	5
Mvmt Flow	176	40	15	232	36	10

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	218
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.18
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.272
Pot Cap-1 Maneuver	-	-	1317
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1314
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	589	-	-	1314	-
HCM Lane V/C Ratio	0.078	-	-	0.012	-
HCM Control Delay (s)	11.6	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

10/16/2023

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	60	65	26	67	11
Future Vol, veh/h	6	60	65	26	67	11
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	11	11	5	5
Mvmt Flow	7	65	71	28	73	12

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	100	0	0 166 87
Stage 1	-	-	- 86 -
Stage 2	-	-	- 80 -
Critical Hdwy	4.12	-	- 6.45 6.25
Critical Hdwy Stg 1	-	-	- 5.45 -
Critical Hdwy Stg 2	-	-	- 5.45 -
Follow-up Hdwy	2.218	-	- 3.545 3.345
Pot Cap-1 Maneuver	1493	-	- 818 963
Stage 1	-	-	- 930 -
Stage 2	-	-	- 936 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1492	-	- 812 961
Mov Cap-2 Maneuver	-	-	- 812 -
Stage 1	-	-	- 924 -
Stage 2	-	-	- 935 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1492	-	-	-	830
HCM Lane V/C Ratio	0.004	-	-	-	0.102
HCM Control Delay (s)	7.4	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

10/16/2023

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	13	109	65	25	0	70	2	23	0	2	0
Future Vol, veh/h	1	13	109	65	25	0	70	2	23	0	2	0
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	3	3	6	6	6	50	50	50
Mvmt Flow	1	14	118	71	27	0	76	2	25	0	2	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	32	0	0	132	0	0	245	249	73	263	308	32
Stage 1	-	-	-	-	-	-	75	75	-	174	174	-
Stage 2	-	-	-	-	-	-	170	174	-	89	134	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.16	6.56	6.26	7.6	7	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.554	4.054	3.354	3.95	4.45	3.75
Pot Cap-1 Maneuver	1580	-	-	1447	-	-	701	647	978	602	534	920
Stage 1	-	-	-	-	-	-	924	825	-	728	673	-
Stage 2	-	-	-	-	-	-	823	747	-	813	702	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1572	-	-	1447	-	-	672	611	978	560	504	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	672	611	-	560	504	-
Stage 1	-	-	-	-	-	-	923	824	-	724	636	-
Stage 2	-	-	-	-	-	-	779	706	-	789	701	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			5.5			10.8			12.2		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	725	1572	-	-	1447	-	-	504				
HCM Lane V/C Ratio	0.142	0.001	-	-	0.049	-	-	0.004				
HCM Control Delay (s)	10.8	7.3	0	-	7.6	0	-	12.2				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.5	0	-	-	0.2	-	-	0				

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	258	225	144	192	84	320	752	95	65	597	149
Future Volume (vph)	152	258	225	144	192	84	320	752	95	65	597	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.95		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3286		1752	3329		1770	3475		1752	3389	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	3286		1752	3329		1770	3475		1752	3389	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	163	277	242	155	206	90	344	809	102	70	642	160
RTOR Reduction (vph)	0	185	0	0	57	0	0	10	0	0	23	0
Lane Group Flow (vph)	163	334	0	155	239	0	344	901	0	70	779	0
Confl. Peds. (#/hr)	1		7	7		1	2					2
Confl. Bikes (#/hr)			2			2			1			1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	17.5		10.3	17.4		21.6	38.8		7.4	24.6	
Effective Green, g (s)	10.4	17.5		10.3	17.4		21.6	38.8		7.4	24.6	
Actuated g/C Ratio	0.12	0.19		0.11	0.19		0.24	0.43		0.08	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	206	638		200	643		424	1498		144	926	
v/s Ratio Prot	c0.09	c0.10		0.09	0.07		c0.19	0.26		0.04	c0.23	
v/s Ratio Perm												
v/c Ratio	0.79	0.52		0.78	0.37		0.81	0.60		0.49	0.84	
Uniform Delay, d1	38.7	32.5		38.7	31.5		32.3	19.7		39.5	30.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.4	3.1		16.9	1.6		11.2	0.7		2.6	7.0	
Delay (s)	57.2	35.6		55.7	33.2		43.5	20.4		42.1	37.8	
Level of Service	E	D		E	C		D	C		D	D	
Approach Delay (s)		40.7			40.9			26.7			38.2	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			34.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			75.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	258	225	144	192	84	320	752	95	65	597	149
Future Volume (veh/h)	152	258	225	144	192	84	320	752	95	65	597	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	163	277	57	155	206	33	344	809	92	70	642	137
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	196	771	156	187	784	123	380	1298	148	90	698	149
Arrive On Green	0.11	0.26	0.26	0.11	0.26	0.26	0.21	0.40	0.40	0.05	0.24	0.24
Sat Flow, veh/h	1795	2955	598	1767	3041	479	1781	3210	365	1767	2882	614
Grp Volume(v), veh/h	163	166	168	155	118	121	344	448	453	70	392	387
Grp Sat Flow(s),veh/h/ln	1795	1791	1762	1767	1763	1757	1781	1777	1799	1767	1763	1734
Q Serve(g_s), s	8.0	6.8	7.0	7.7	4.8	4.9	16.9	18.1	18.1	3.5	19.5	19.6
Cycle Q Clear(g_c), s	8.0	6.8	7.0	7.7	4.8	4.9	16.9	18.1	18.1	3.5	19.5	19.6
Prop In Lane	1.00		0.34	1.00		0.27	1.00		0.20	1.00		0.35
Lane Grp Cap(c), veh/h	196	467	460	187	454	453	380	718	727	90	427	420
V/C Ratio(X)	0.83	0.36	0.37	0.83	0.26	0.27	0.91	0.62	0.62	0.78	0.92	0.92
Avail Cap(c_a), veh/h	199	467	460	196	454	453	416	718	727	181	431	424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	27.1	27.2	39.4	26.6	26.6	34.5	21.4	21.4	42.2	33.2	33.3
Incr Delay (d2), s/veh	24.3	2.1	2.2	22.7	1.3	1.4	22.0	1.7	1.7	13.2	24.5	25.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	3.0	3.1	4.4	2.1	2.2	9.3	7.3	7.3	1.8	10.8	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.6	29.2	29.4	62.1	27.9	28.0	56.5	23.0	23.0	55.4	57.8	58.5
LnGrp LOS	E	C	C	E	C	C	E	C	C	E	E	E
Approach Vol, veh/h	497			394			1245			849		
Approach Delay, s/veh	40.6			41.4			32.3			57.9		
Approach LOS	D			D			C			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.5	27.5	23.2	25.8	13.8	27.2	8.6	40.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	21.0	21.0	22.0	10.0	21.0	9.2	33.8				
Max Q Clear Time (g_c+I1), s	9.7	9.0	18.9	21.6	10.0	6.9	5.5	20.1				
Green Ext Time (p_c), s	0.0	1.4	0.2	0.2	0.0	1.0	0.0	4.6				
Intersection Summary												
HCM 6th Ctrl Delay	42.2											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	288	46	20	268	18	70	88	19	26	91	72
Future Volume (vph)	78	288	46	20	268	18	70	88	19	26	91	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1786	1881	1550	1763	1842		1770	1805		1747	1713	
Flt Permitted	0.48	1.00	1.00	0.57	1.00		0.54	1.00		0.68	1.00	
Satd. Flow (perm)	912	1881	1550	1058	1842		1012	1805		1254	1713	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	313	50	22	291	20	76	96	21	28	99	78
RTOR Reduction (vph)	0	0	19	0	3	0	0	16	0	0	58	0
Lane Group Flow (vph)	85	313	31	22	308	0	76	101	0	28	119	0
Confl. Peds. (#/hr)	1		6	6		1			2	2		
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	42.5	37.2	37.2	34.4	33.1		9.5	9.5		9.5	9.5	
Effective Green, g (s)	42.5	37.2	37.2	34.4	33.1		9.5	9.5		9.5	9.5	
Actuated g/C Ratio	0.71	0.62	0.62	0.57	0.55		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	724	1166	961	621	1016		160	285		198	271	
v/s Ratio Prot	c0.01	c0.17		0.00	c0.17			0.06			0.07	
v/s Ratio Perm	0.07		0.02	0.02			c0.08			0.02		
v/c Ratio	0.12	0.27	0.03	0.04	0.30		0.47	0.35		0.14	0.44	
Uniform Delay, d1	3.0	5.2	4.4	5.5	7.2		23.0	22.5		21.7	22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.6	0.1	0.0	0.2		2.2	0.8		0.3	1.1	
Delay (s)	3.0	5.8	4.5	5.6	7.4		25.2	23.3		22.1	24.0	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		5.1			7.3			24.0			23.7	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			12.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			46.2%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	288	46	20	268	18	70	88	19	26	91	72
Future Volume (veh/h)	78	288	46	20	268	18	70	88	19	26	91	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	85	313	32	22	291	17	76	96	5	28	99	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	3	3	3
Cap, veh/h	760	1153	952	717	1002	59	251	287	15	267	243	49
Arrive On Green	0.06	0.61	0.61	0.03	0.57	0.57	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1795	1885	1557	1781	1747	102	1267	1762	92	1280	1490	301
Grp Volume(v), veh/h	85	313	32	22	0	308	76	0	101	28	0	119
Grp Sat Flow(s),veh/h/ln	1795	1885	1557	1781	0	1849	1267	0	1853	1280	0	1791
Q Serve(g_s), s	1.1	4.6	0.5	0.3	0.0	5.1	3.4	0.0	2.9	1.2	0.0	3.6
Cycle Q Clear(g_c), s	1.1	4.6	0.5	0.3	0.0	5.1	7.0	0.0	2.9	4.1	0.0	3.6
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.05	1.00		0.17
Lane Grp Cap(c), veh/h	760	1153	952	717	0	1061	251	0	302	267	0	292
V/C Ratio(X)	0.11	0.27	0.03	0.03	0.00	0.29	0.30	0.00	0.33	0.10	0.00	0.41
Avail Cap(c_a), veh/h	826	1153	952	850	0	1061	446	0	587	464	0	567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.78	0.78	0.78	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.3	5.4	4.6	4.9	0.0	6.5	25.7	0.0	22.2	24.0	0.0	22.5
Incr Delay (d2), s/veh	0.1	0.5	0.1	0.0	0.0	0.1	0.7	0.0	0.6	0.2	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.4	0.1	0.1	0.0	1.5	1.0	0.0	1.2	0.4	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.4	5.9	4.7	4.9	0.0	6.7	26.3	0.0	22.9	24.2	0.0	23.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h	430				330				177			
Approach Delay, s/veh	5.5				6.6				24.4			
Approach LOS	A				A				C			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	40.7		13.8	7.8	38.4		13.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	23.0		19.0	6.0	23.0		19.0				
Max Q Clear Time (g_c+I1), s	2.3	6.6		9.0	3.1	7.1		6.1				
Green Ext Time (p_c), s	0.0	1.7		0.5	0.0	1.5		0.5				
Intersection Summary												
HCM 6th Ctrl Delay	11.4											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

10/16/2023

Intersection

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	282	27	17	253	42	9
Future Vol, veh/h	282	27	17	253	42	9
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	4	4
Mvmt Flow	282	27	17	253	42	9

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	310
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1250
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1249
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	496	-	-	1249	-
HCM Lane V/C Ratio	0.103	-	-	0.014	-
HCM Control Delay (s)	13.1	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

10/16/2023

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	76	81	65	57	8
Future Vol, veh/h	8	76	81	65	57	8
Conflicting Peds, #/hr	1	0	0	1	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	9	83	88	71	62	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	160	0	0 227 127
Stage 1	-	-	- 125 -
Stage 2	-	-	- 102 -
Critical Hdwy	4.11	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.209	-	- 3.518 3.318
Pot Cap-1 Maneuver	1425	-	- 761 923
Stage 1	-	-	- 901 -
Stage 2	-	-	- 922 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1424	-	- 754 920
Mov Cap-2 Maneuver	-	-	- 754 -
Stage 1	-	-	- 894 -
Stage 2	-	-	- 921 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1424	-	-	-	771
HCM Lane V/C Ratio	0.006	-	-	-	0.092
HCM Control Delay (s)	7.5	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

10/16/2023

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	16	104	81	14	0	132	4	118	0	3	0
Future Vol, veh/h	0	16	104	81	14	0	132	4	118	0	3	0
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	1	1	1	33	33	33
Mvmt Flow	0	17	113	88	15	0	143	4	128	0	3	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	18	0	0	132	0	0	269	270	76	334	326	18
Stage 1	-	-	-	-	-	-	76	76	-	194	194	-
Stage 2	-	-	-	-	-	-	193	194	-	140	132	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.11	6.51	6.21	7.43	6.83	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.509	4.009	3.309	3.797	4.297	3.597
Pot Cap-1 Maneuver	1586	-	-	1441	-	-	686	638	988	565	545	977
Stage 1	-	-	-	-	-	-	936	834	-	741	685	-
Stage 2	-	-	-	-	-	-	811	742	-	794	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1581	-	-	1438	-	-	649	595	986	464	508	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	649	595	-	464	508	-
Stage 1	-	-	-	-	-	-	934	832	-	739	640	-
Stage 2	-	-	-	-	-	-	757	694	-	687	730	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			6.5			12.3			12.1		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	770	1581	-	-	1438	-	-	508				
HCM Lane V/C Ratio	0.359	-	-	-	0.061	-	-	0.006				
HCM Control Delay (s)	12.3	0	-	-	7.7	0	-	12.1				
HCM Lane LOS	B	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.6	0	-	-	0.2	-	-	0				

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	158	177	136	195	71	168	396	55	44	570	98
Future Volume (vph)	96	158	177	136	195	71	168	396	55	44	570	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.96		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1656	3023		1719	3301		1736	3402		1703	3330	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1656	3023		1719	3301		1736	3402		1703	3330	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	172	192	148	212	77	183	430	60	48	620	107
RTOR Reduction (vph)	0	159	0	0	59	0	0	13	0	0	19	0
Lane Group Flow (vph)	104	205	0	148	230	0	183	477	0	48	708	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	5.8	12.2		8.6	15.0		12.7	28.1		5.1	20.5	
Effective Green, g (s)	5.8	12.2		8.6	15.0		12.7	28.1		5.1	20.5	
Actuated g/C Ratio	0.08	0.17		0.12	0.21		0.18	0.40		0.07	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	137	526		211	707		314	1365		124	975	
v/s Ratio Prot	0.06	0.07		c0.09	c0.07		c0.11	0.14		0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.76	0.39		0.70	0.33		0.58	0.35		0.39	0.73	
Uniform Delay, d1	31.4	25.6		29.5	23.2		26.2	14.6		31.0	22.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.1	2.2		10.1	1.2		2.7	0.2		2.0	2.7	
Delay (s)	52.6	27.8		39.5	24.5		29.0	14.7		33.0	24.9	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s)		33.3			29.6			18.6			25.4	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			25.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			64.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	158	177	136	195	71	168	396	55	44	570	98
Future Volume (veh/h)	96	158	177	136	195	71	168	396	55	44	570	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1767	1826	1826	1826	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	104	172	33	148	212	18	183	430	47	48	620	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	5	5	5	4	4	4	6	6	6
Cap, veh/h	130	854	160	174	1056	89	222	1030	112	75	728	104
Arrive On Green	0.08	0.30	0.30	0.10	0.33	0.33	0.13	0.32	0.32	0.04	0.24	0.24
Sat Flow, veh/h	1682	2812	528	1739	3238	273	1753	3176	345	1725	3021	433
Grp Volume(v), veh/h	104	101	104	148	113	117	183	236	241	48	353	356
Grp Sat Flow(s),veh/h/ln	1682	1678	1662	1739	1735	1776	1753	1749	1773	1725	1721	1733
Q Serve(g_s), s	4.3	3.1	3.3	5.9	3.3	3.3	7.1	7.4	7.5	1.9	13.7	13.8
Cycle Q Clear(g_c), s	4.3	3.1	3.3	5.9	3.3	3.3	7.1	7.4	7.5	1.9	13.7	13.8
Prop In Lane	1.00		0.32	1.00		0.15	1.00		0.19	1.00		0.25
Lane Grp Cap(c), veh/h	130	510	505	174	566	579	222	567	575	75	415	418
V/C Ratio(X)	0.80	0.20	0.21	0.85	0.20	0.20	0.82	0.42	0.42	0.64	0.85	0.85
Avail Cap(c_a), veh/h	144	510	505	174	566	579	225	567	575	155	455	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	18.1	18.1	31.0	17.0	17.0	29.8	18.5	18.5	32.9	25.4	25.4
Incr Delay (d2), s/veh	24.2	0.9	0.9	29.6	0.7	0.7	21.1	0.5	0.5	8.8	13.3	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	1.2	1.3	3.8	1.3	1.4	4.1	2.7	2.8	0.9	6.6	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.9	18.9	19.0	60.6	17.7	17.8	51.0	19.0	19.0	41.8	38.7	38.9
LnGrp LOS	E	B	B	E	B	B	D	B	B	D	D	D
Approach Vol, veh/h	309			378			660			757		
Approach Delay, s/veh	31.4			34.5			27.8			39.0		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	25.3	12.9	20.9	9.4	26.8	7.0	26.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.5	9.0	18.5	6.0	20.5	6.3	21.2				
Max Q Clear Time (g_c+I1), s	7.9	5.3	9.1	15.8	6.3	5.3	3.9	9.5				
Green Ext Time (p_c), s	0.0	0.8	0.0	1.1	0.0	1.0	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay	33.6											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	134	51	50	244	20	120	59	65	17	79	66
Future Volume (vph)	37	134	51	50	244	20	120	59	65	17	79	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	1792	1490	1701	1768		1669	1589		1671	1644	
Flt Permitted	0.58	1.00	1.00	0.64	1.00		0.62	1.00		0.67	1.00	
Satd. Flow (perm)	1045	1792	1490	1139	1768		1096	1589		1179	1644	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	146	55	54	265	22	130	64	71	18	86	72
RTOR Reduction (vph)	0	0	26	0	4	0	0	57	0	0	57	0
Lane Group Flow (vph)	40	146	29	54	283	0	130	78	0	18	101	0
Confl. Peds. (#/hr)	3		1	1		3	2		7	7		2
Confl. Bikes (#/hr)			1						3			
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	34.5	31.8	31.8	37.3	33.2		12.1	12.1		12.1	12.1	
Effective Green, g (s)	34.5	31.8	31.8	37.3	33.2		12.1	12.1		12.1	12.1	
Actuated g/C Ratio	0.58	0.53	0.53	0.62	0.55		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	630	949	789	746	978		221	320		237	331	
v/s Ratio Prot	0.00	0.08		c0.00	c0.16			0.05			0.06	
v/s Ratio Perm	0.03		0.02	0.04			c0.12			0.02		
v/c Ratio	0.06	0.15	0.04	0.07	0.29		0.59	0.24		0.08	0.30	
Uniform Delay, d1	5.5	7.2	6.8	4.5	7.1		21.7	20.1		19.4	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3	0.1	0.0	0.2		4.0	0.4		0.1	0.5	
Delay (s)	5.6	7.6	6.8	4.5	7.3		25.7	20.5		19.6	20.9	
Level of Service	A	A	A	A	A		C	C		B	C	
Approach Delay (s)		7.1			6.9			23.0			20.8	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			13.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			47.9%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	134	51	50	244	20	120	59	65	17	79	66
Future Volume (veh/h)	37	134	51	50	244	20	120	59	65	17	79	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1781	1781	1781	1796	1796	1796
Adj Flow Rate, veh/h	40	146	29	54	265	18	130	64	14	18	86	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	8	8	8	7	7	7
Cap, veh/h	690	989	819	797	931	63	309	288	63	329	304	53
Arrive On Green	0.04	0.55	0.55	0.05	0.56	0.56	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1725	1811	1499	1725	1676	114	1216	1408	308	1258	1485	259
Grp Volume(v), veh/h	40	146	29	54	0	283	130	0	78	18	0	101
Grp Sat Flow(s),veh/h/ln	1725	1811	1499	1725	0	1790	1216	0	1717	1258	0	1744
Q Serve(g_s), s	0.6	2.4	0.5	0.8	0.0	5.0	6.1	0.0	2.3	0.7	0.0	2.9
Cycle Q Clear(g_c), s	0.6	2.4	0.5	0.8	0.0	5.0	9.0	0.0	2.3	3.0	0.0	2.9
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.18	1.00		0.15
Lane Grp Cap(c), veh/h	690	989	819	797	0	994	309	0	351	329	0	356
V/C Ratio(X)	0.06	0.15	0.04	0.07	0.00	0.28	0.42	0.00	0.22	0.05	0.00	0.28
Avail Cap(c_a), veh/h	792	989	819	884	0	994	466	0	572	492	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.89	0.89	0.89	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.4	6.7	6.3	5.1	0.0	7.1	24.0	0.0	19.9	21.1	0.0	20.2
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.0	0.0	0.2	0.9	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.8	0.1	0.2	0.0	1.5	1.7	0.0	0.9	0.2	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	7.0	6.4	5.1	0.0	7.2	24.9	0.0	20.2	21.2	0.0	20.6
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h	215			337			208			119		
Approach Delay, s/veh	6.6			6.9			23.1			20.7		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	36.8		16.3	6.4	37.3		16.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	22.0		20.0	6.0	22.0		20.0				
Max Q Clear Time (g_c+I1), s	2.8	4.4		11.0	2.6	7.0		5.0				
Green Ext Time (p_c), s	0.0	0.7		0.5	0.0	1.3		0.4				
Intersection Summary												
HCM 6th Ctrl Delay	12.5											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

10/16/2023

Intersection

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	176	39	15	229	36	9
Future Vol, veh/h	176	39	15	229	36	9
Conflicting Peds, #/hr	0	2	2	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	5	5
Mvmt Flow	191	42	16	249	39	10

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	235
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.18
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.272
Pot Cap-1 Maneuver	-	-	1298
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1296
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	561	-	-	1296	-
HCM Lane V/C Ratio	0.087	-	-	0.013	-
HCM Control Delay (s)	12	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

10/16/2023

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	69	70	27	70	12
Future Vol, veh/h	6	69	70	27	70	12
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	11	11	5	5
Mvmt Flow	7	75	76	29	76	13

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	106	0	0 182 93
Stage 1	-	-	- 92 -
Stage 2	-	-	- 90 -
Critical Hdwy	4.12	-	- 6.45 6.25
Critical Hdwy Stg 1	-	-	- 5.45 -
Critical Hdwy Stg 2	-	-	- 5.45 -
Follow-up Hdwy	2.218	-	- 3.545 3.345
Pot Cap-1 Maneuver	1485	-	- 801 956
Stage 1	-	-	- 924 -
Stage 2	-	-	- 926 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1484	-	- 795 954
Mov Cap-2 Maneuver	-	-	- 795 -
Stage 1	-	-	- 918 -
Stage 2	-	-	- 925 -

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1484	-	-	-	815
HCM Lane V/C Ratio	0.004	-	-	-	0.109
HCM Control Delay (s)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

10/16/2023

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	14	120	69	26	0	75	2	24	0	2	0
Future Vol, veh/h	1	14	120	69	26	0	75	2	24	0	2	0
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	3	3	6	6	6	50	50	50
Mvmt Flow	1	15	130	75	28	0	82	2	26	0	2	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	145	0	0	261	265	80	279	330	33
Stage 1	-	-	-	-	-	-	82	82	-	183	183	-
Stage 2	-	-	-	-	-	-	179	183	-	96	147	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.16	6.56	6.26	7.6	7	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.554	4.054	3.354	3.95	4.45	3.75
Pot Cap-1 Maneuver	1579	-	-	1431	-	-	684	634	969	587	519	918
Stage 1	-	-	-	-	-	-	916	819	-	719	666	-
Stage 2	-	-	-	-	-	-	814	741	-	805	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1571	-	-	1431	-	-	654	597	969	544	488	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	654	597	-	544	488	-
Stage 1	-	-	-	-	-	-	915	818	-	715	627	-
Stage 2	-	-	-	-	-	-	768	698	-	780	691	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			5.6			11			12.4		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	707	1571	-	-	1431	-	-	488				
HCM Lane V/C Ratio	0.155	0.001	-	-	0.052	-	-	0.004				
HCM Control Delay (s)	11	7.3	0	-	7.7	0	-	12.4				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.5	0	-	-	0.2	-	-	0				

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	306	307	151	240	91	417	788	100	72	627	185
Future Volume (vph)	182	306	307	151	240	91	417	788	100	72	627	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3265		1752	3346		1770	3475		1752	3373	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	3265		1752	3346		1770	3475		1752	3373	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	306	307	151	240	91	417	788	100	72	627	185
RTOR Reduction (vph)	0	213	0	0	46	0	0	10	0	0	30	0
Lane Group Flow (vph)	182	400	0	151	285	0	417	878	0	72	782	0
Confl. Peds. (#/hr)	1		7	7		1	2					2
Confl. Bikes (#/hr)			2			2			1			1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.5	17.0		9.2	15.7		24.5	40.5		7.3	23.3	
Effective Green, g (s)	10.5	17.0		9.2	15.7		24.5	40.5		7.3	23.3	
Actuated g/C Ratio	0.12	0.19		0.10	0.17		0.27	0.45		0.08	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	208	616		179	583		481	1563		142	873	
v/s Ratio Prot	c0.10	c0.12		0.09	0.09		c0.24	0.25		0.04	c0.23	
v/s Ratio Perm												
v/c Ratio	0.88	0.65		0.84	0.49		0.87	0.56		0.51	0.90	
Uniform Delay, d1	39.1	33.7		39.7	33.5		31.2	18.2		39.6	32.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.9	5.2		28.7	2.9		15.1	0.5		2.8	11.7	
Delay (s)	70.1	39.0		68.4	36.4		46.3	18.7		42.5	43.9	
Level of Service	E	D		E	D		D	B		D	D	
Approach Delay (s)		46.1			46.4			27.5			43.8	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			38.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			86.8%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	306	307	151	240	91	417	788	100	72	627	185
Future Volume (veh/h)	182	306	307	151	240	91	417	788	100	72	627	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	182	306	94	151	240	45	417	788	90	72	627	155
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	205	632	190	177	651	120	441	1397	159	93	670	165
Arrive On Green	0.11	0.23	0.23	0.10	0.22	0.22	0.25	0.44	0.44	0.05	0.24	0.24
Sat Flow, veh/h	1795	2697	811	1767	2960	545	1781	3209	366	1767	2792	689
Grp Volume(v), veh/h	182	201	199	151	141	144	417	436	442	72	395	387
Grp Sat Flow(s),veh/h/ln	1795	1791	1717	1767	1763	1742	1781	1777	1798	1767	1763	1719
Q Serve(g_s), s	9.0	8.7	9.0	7.6	6.1	6.3	20.7	16.5	16.5	3.6	19.8	19.9
Cycle Q Clear(g_c), s	9.0	8.7	9.0	7.6	6.1	6.3	20.7	16.5	16.5	3.6	19.8	19.9
Prop In Lane	1.00		0.47	1.00		0.31	1.00		0.20	1.00		0.40
Lane Grp Cap(c), veh/h	205	420	403	177	388	383	441	773	783	93	423	413
V/C Ratio(X)	0.89	0.48	0.49	0.85	0.36	0.38	0.94	0.56	0.56	0.78	0.93	0.94
Avail Cap(c_a), veh/h	205	420	403	177	388	383	441	773	783	183	423	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	29.7	29.8	39.9	29.8	29.8	33.2	19.0	19.0	42.1	33.5	33.5
Incr Delay (d2), s/veh	33.7	3.9	4.3	30.1	2.5	2.7	29.3	0.9	0.9	12.9	28.0	29.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.0	4.0	4.7	2.8	2.9	12.0	6.4	6.5	1.9	11.3	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.0	33.6	34.1	69.9	32.3	32.5	62.5	20.0	20.0	55.0	61.5	62.5
LnGrp LOS	E	C	C	E	C	C	E	B	B	E	E	E
Approach Vol, veh/h		582			436			1295			854	
Approach Delay, s/veh		46.1			45.4			33.7			61.4	
Approach LOS		D			D			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	25.1	26.3	25.6	14.3	23.8	8.7	43.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	21.1	22.3	21.6	10.3	19.8	9.3	34.6				
Max Q Clear Time (g_c+I1), s	9.6	11.0	22.7	21.9	11.0	8.3	5.6	18.5				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.0	0.0	1.1	0.0	4.8				
Intersection Summary												
HCM 6th Ctrl Delay			45.0									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	332	54	21	310	19	79	92	20	27	95	81
Future Volume (vph)	88	332	54	21	310	19	79	92	20	27	95	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1786	1881	1550	1764	1844		1770	1805		1747	1707	
Flt Permitted	0.47	1.00	1.00	0.56	1.00		0.54	1.00		0.68	1.00	
Satd. Flow (perm)	886	1881	1550	1040	1844		1014	1805		1260	1707	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	88	332	54	21	310	19	79	92	20	27	95	81
RTOR Reduction (vph)	0	0	20	0	3	0	0	16	0	0	63	0
Lane Group Flow (vph)	88	332	34	21	326	0	79	96	0	27	113	0
Confl. Peds. (#/hr)	1		6	6		1			2	2		
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	42.6	37.3	37.3	34.5	33.2		9.4	9.4		9.4	9.4	
Effective Green, g (s)	42.6	37.3	37.3	34.5	33.2		9.4	9.4		9.4	9.4	
Actuated g/C Ratio	0.71	0.62	0.62	0.58	0.55		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	710	1169	963	613	1020		158	282		197	267	
v/s Ratio Prot	c0.01	c0.18		0.00	c0.18			0.05			0.07	
v/s Ratio Perm	0.08		0.02	0.02			c0.08			0.02		
v/c Ratio	0.12	0.28	0.03	0.03	0.32		0.50	0.34		0.14	0.42	
Uniform Delay, d1	3.0	5.2	4.4	5.5	7.3		23.1	22.5		21.8	22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.6	0.1	0.0	0.2		2.5	0.7		0.3	1.1	
Delay (s)	3.1	5.8	4.5	5.5	7.5		25.6	23.3		22.1	23.9	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		5.2			7.3			24.2			23.7	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			11.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			50.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

10/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	332	54	21	310	19	79	92	20	27	95	81
Future Volume (veh/h)	88	332	54	21	310	19	79	92	20	27	95	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	88	332	34	21	310	16	79	92	4	27	95	18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	3	3	3
Cap, veh/h	747	1157	956	702	1011	52	254	287	12	269	244	46
Arrive On Green	0.06	0.61	0.61	0.02	0.57	0.57	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1795	1885	1557	1781	1760	91	1274	1779	77	1286	1508	286
Grp Volume(v), veh/h	88	332	34	21	0	326	79	0	96	27	0	113
Grp Sat Flow(s),veh/h/ln	1795	1885	1557	1781	0	1851	1274	0	1856	1286	0	1794
Q Serve(g_s), s	1.1	5.0	0.5	0.3	0.0	5.5	3.5	0.0	2.7	1.1	0.0	3.4
Cycle Q Clear(g_c), s	1.1	5.0	0.5	0.3	0.0	5.5	6.9	0.0	2.7	3.9	0.0	3.4
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.04	1.00		0.16
Lane Grp Cap(c), veh/h	747	1157	956	702	0	1063	254	0	300	269	0	290
V/C Ratio(X)	0.12	0.29	0.04	0.03	0.00	0.31	0.31	0.00	0.32	0.10	0.00	0.39
Avail Cap(c_a), veh/h	812	1157	956	836	0	1063	452	0	588	468	0	568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.67	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.3	5.4	4.6	4.9	0.0	6.6	25.6	0.0	22.2	24.0	0.0	22.5
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.0	0.2	0.7	0.0	0.6	0.2	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.5	0.1	0.1	0.0	1.6	1.1	0.0	1.2	0.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.3	5.8	4.6	5.0	0.0	6.8	26.3	0.0	22.8	24.1	0.0	23.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h	454			347			175			140		
Approach Delay, s/veh	5.5			6.7			24.4			23.5		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	5.5	40.8	13.7		7.8	38.5	13.7					
Change Period (Y+Rc), s	4.0	4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s	6.0	23.0	19.0		6.0	23.0	19.0					
Max Q Clear Time (g_c+I1), s	2.3	7.0	8.9		3.1	7.5	5.9					
Green Ext Time (p_c), s	0.0	1.8	0.5		0.0	1.6	0.5					
Intersection Summary												
HCM 6th Ctrl Delay	11.1											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

10/16/2023

Intersection

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	312	32	18	282	49	9
Future Vol, veh/h	312	32	18	282	49	9
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	4	4
Mvmt Flow	312	32	18	282	49	9

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	345
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1214
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1213
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	453	-	-	1213	-
HCM Lane V/C Ratio	0.128	-	-	0.015	-
HCM Control Delay (s)	14.1	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

10/16/2023

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	83	91	71	62	8
Future Vol, veh/h	8	83	91	71	62	8
Conflicting Peds, #/hr	1	0	0	1	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	9	90	99	77	67	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	177	0	0 248 141
Stage 1	-	-	- - 139 -
Stage 2	-	-	- - 109 -
Critical Hdwy	4.11	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.209	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1405	-	- - 740 907
Stage 1	-	-	- - 888 -
Stage 2	-	-	- - 916 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1404	-	- - 733 904
Mov Cap-2 Maneuver	-	-	- - 733 -
Stage 1	-	-	- - 881 -
Stage 2	-	-	- - 915 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1404	-	-	-	749
HCM Lane V/C Ratio	0.006	-	-	-	0.102
HCM Control Delay (s)	7.6	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

10/16/2023

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	18	114	86	17	0	145	4	124	0	3	0
Future Vol, veh/h	0	18	114	86	17	0	145	4	124	0	3	0
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	1	1	1	33	33	33
Mvmt Flow	0	20	124	93	18	0	158	4	135	0	3	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	21	0	0	146	0	0	290	291	84	359	353	21
Stage 1	-	-	-	-	-	-	84	84	-	207	207	-
Stage 2	-	-	-	-	-	-	206	207	-	152	146	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.11	6.51	6.21	7.43	6.83	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.509	4.009	3.309	3.797	4.297	3.597
Pot Cap-1 Maneuver	1582	-	-	1424	-	-	664	621	978	543	525	974
Stage 1	-	-	-	-	-	-	927	827	-	729	676	-
Stage 2	-	-	-	-	-	-	798	732	-	782	721	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1577	-	-	1421	-	-	626	577	976	440	488	971
Mov Cap-2 Maneuver	-	-	-	-	-	-	626	577	-	440	488	-
Stage 1	-	-	-	-	-	-	925	825	-	727	629	-
Stage 2	-	-	-	-	-	-	741	681	-	670	720	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			6.4			13			12.4		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	747	1577	-	-	1421	-	-	488				
HCM Lane V/C Ratio	0.397	-	-	-	0.066	-	-	0.007				
HCM Control Delay (s)	13	0	-	-	7.7	0	-	12.4				
HCM Lane LOS	B	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.9	0	-	-	0.2	-	-	0				

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	159	177	149	200	85	168	396	60	49	570	98
Future Volume (vph)	96	159	177	149	200	85	168	396	60	49	570	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.96		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1656	3024		1719	3285		1736	3397		1703	3330	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1656	3024		1719	3285		1736	3397		1703	3330	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	173	192	162	217	92	183	430	65	53	620	107
RTOR Reduction (vph)	0	159	0	0	73	0	0	14	0	0	19	0
Lane Group Flow (vph)	104	206	0	162	236	0	183	481	0	53	708	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.2	12.0		8.9	14.7		12.9	27.9		5.2	20.2	
Effective Green, g (s)	6.2	12.0		8.9	14.7		12.9	27.9		5.2	20.2	
Actuated g/C Ratio	0.09	0.17		0.13	0.21		0.18	0.40		0.07	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	518		218	689		319	1353		126	960	
v/s Ratio Prot	0.06	0.07		c0.09	c0.07		c0.11	0.14		0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.71	0.40		0.74	0.34		0.57	0.36		0.42	0.74	
Uniform Delay, d1	31.0	25.8		29.4	23.5		26.0	14.7		31.0	22.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.1	2.3		12.8	1.4		2.5	0.2		2.3	3.0	
Delay (s)	46.2	28.1		42.3	24.9		28.5	14.9		33.2	25.5	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s/veh)		32.1			30.9			18.6			26.0	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			26.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			64.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	159	177	149	200	85	168	396	60	49	570	98
Future Volume (veh/h)	96	159	177	149	200	85	168	396	60	49	570	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1767	1826	1826	1826	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	104	173	34	162	217	26	183	430	51	53	620	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	5	5	5	4	4	4	6	6	6
Cap, veh/h	131	829	159	199	1039	123	210	991	117	79	728	104
Arrive On Green	0.08	0.30	0.30	0.11	0.33	0.33	0.12	0.32	0.32	0.05	0.24	0.24
Sat Flow, veh/h	1682	2800	538	1739	3123	370	1753	3146	371	1725	3021	433
Grp Volume(v), veh/h	104	102	105	162	119	124	183	238	243	53	353	356
Grp Sat Flow(s),veh/h/ln	1682	1678	1660	1739	1735	1758	1753	1749	1768	1725	1721	1733
Q Serve(g_s), s	4.3	3.2	3.3	6.4	3.5	3.5	7.2	7.6	7.6	2.1	13.7	13.8
Cycle Q Clear(g_c), s	4.3	3.2	3.3	6.4	3.5	3.5	7.2	7.6	7.6	2.1	13.7	13.8
Prop In Lane	1.00		0.32	1.00		0.21	1.00		0.21	1.00		0.25
Lane Grp Cap(c), veh/h	131	497	491	199	577	585	210	551	557	79	415	418
V/C Ratio(X)	0.80	0.21	0.21	0.82	0.21	0.21	0.87	0.43	0.44	0.67	0.85	0.85
Avail Cap(c_a), veh/h	173	497	491	199	577	585	210	551	557	160	455	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	18.5	18.5	30.3	16.7	16.8	30.3	19.0	19.0	32.9	25.4	25.4
Incr Delay (d2), s/veh	16.9	0.9	1.0	21.1	0.8	0.8	30.1	0.5	0.5	9.3	13.3	13.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.3	1.3	3.7	1.4	1.4	4.6	2.8	2.9	1.0	6.6	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.6	19.4	19.5	51.3	17.5	17.5	60.3	19.5	19.6	42.2	38.7	38.9
LnGrp LOS	D	B	B	D	B	B	E	B	B	D	D	D
Approach Vol, veh/h	311			405			664			762		
Approach Delay, s/veh	29.2			31.0			30.8			39.0		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	24.7	12.4	20.9	9.4	27.3	7.2	26.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	8.0	19.1	8.4	18.5	7.2	19.9	6.5	20.4				
Max Q Clear Time (g_c+I1), s	8.4	5.3	9.2	15.8	6.3	5.5	4.1	9.6				
Green Ext Time (p_c), s	0.0	0.8	0.0	1.1	0.0	1.1	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	33.5											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	145	51	54	276	20	120	59	66	17	79	66
Future Volume (vph)	37	145	51	54	276	20	120	59	66	17	79	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	1792	1490	1701	1771		1669	1588		1671	1644	
Flt Permitted	0.56	1.00	1.00	0.63	1.00		0.62	1.00		0.67	1.00	
Satd. Flow (perm)	998	1792	1490	1127	1771		1096	1588		1178	1644	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	158	55	59	300	22	130	64	72	18	86	72
RTOR Reduction (vph)	0	0	26	0	3	0	0	57	0	0	57	0
Lane Group Flow (vph)	40	158	29	59	319	0	130	79	0	18	101	0
Confl. Peds. (#/hr)	3		1	1		3	2		7	7		2
Confl. Bikes (#/hr)			1						3			
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	34.5	31.8	31.8	37.3	33.2		12.1	12.1		12.1	12.1	
Effective Green, g (s)	34.5	31.8	31.8	37.3	33.2		12.1	12.1		12.1	12.1	
Actuated g/C Ratio	0.57	0.53	0.53	0.62	0.55		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	605	949	789	739	979		221	320		237	331	
v/s Ratio Prot	0.00	0.09		c0.01	c0.18			0.05			0.06	
v/s Ratio Perm	0.04		0.02	0.04			c0.12			0.02		
v/c Ratio	0.07	0.17	0.04	0.08	0.33		0.59	0.25		0.08	0.30	
Uniform Delay, d1	5.6	7.3	6.8	4.5	7.3		21.7	20.1		19.4	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.4	0.1	0.0	0.2		4.0	0.4		0.1	0.5	
Delay (s)	5.6	7.6	6.8	4.5	7.5		25.7	20.5		19.6	20.9	
Level of Service	A	A	A	A	A		C	C		B	C	
Approach Delay (s/veh)		7.1			7.0			23.0			20.8	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			13.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			48.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	145	51	54	276	20	120	59	66	17	79	66
Future Volume (veh/h)	37	145	51	54	276	20	120	59	66	17	79	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1781	1781	1781	1796	1796	1796
Adj Flow Rate, veh/h	40	158	29	59	300	19	130	64	15	18	86	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	8	8	8	7	7	7
Cap, veh/h	660	984	815	788	935	59	309	284	66	329	304	53
Arrive On Green	0.04	0.54	0.54	0.05	0.56	0.56	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1725	1811	1499	1725	1685	107	1216	1388	325	1257	1485	259
Grp Volume(v), veh/h	40	158	29	59	0	319	130	0	79	18	0	101
Grp Sat Flow(s), veh/h/ln	1725	1811	1499	1725	0	1792	1216	0	1713	1257	0	1744
Q Serve(g_s), s	0.6	2.6	0.5	0.9	0.0	5.8	6.1	0.0	2.3	0.7	0.0	2.9
Cycle Q Clear(g_c), s	0.6	2.6	0.5	0.9	0.0	5.8	9.0	0.0	2.3	3.0	0.0	2.9
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.19	1.00		0.15
Lane Grp Cap(c), veh/h	660	984	815	788	0	994	309	0	350	329	0	357
V/C Ratio(X)	0.06	0.16	0.04	0.07	0.00	0.32	0.42	0.00	0.23	0.05	0.00	0.28
Avail Cap(c_a), veh/h	763	984	815	870	0	994	466	0	571	491	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.5	6.9	6.4	5.1	0.0	7.2	24.0	0.0	19.9	21.2	0.0	20.2
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.0	0.0	0.2	0.9	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.9	0.1	0.2	0.0	1.7	1.7	0.0	0.9	0.2	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.6	7.2	6.4	5.2	0.0	7.4	24.9	0.0	20.2	21.2	0.0	20.6
LnGrp LOS	A	A	A	A		A	C		C	C		C
Approach Vol, veh/h	227				378				209			
Approach Delay, s/veh	6.8				7.1				23.1			
Approach LOS	A				A				C			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	36.6		16.3	6.4	37.3		16.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	22.0		20.0	6.0	22.0		20.0				
Max Q Clear Time (g_c+I1), s	2.9	4.6		11.0	2.6	7.8		5.0				
Green Ext Time (p_c), s	0.0	0.8		0.5	0.0	1.5		0.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	12.3											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	176	39	15	229	7	36	1	9	21	2	36
Future Vol, veh/h	12	176	39	15	229	7	36	1	9	21	2	36
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	8	8	5	5	5	2	2	2
Mvmt Flow	13	191	42	16	249	8	39	1	10	23	2	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	257	0	0	235	0	0	547	529	214	529	546	254
Stage 1	-	-	-	-	-	-	240	240	-	285	285	-
Stage 2	-	-	-	-	-	-	307	289	-	244	261	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.15	6.55	6.25	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.272	-	-	3.545	4.045	3.345	3.518	4.018	3.318
Pot Cap-1 Maneuver	1274	-	-	1298	-	-	443	451	818	460	445	785
Stage 1	-	-	-	-	-	-	757	701	-	722	676	-
Stage 2	-	-	-	-	-	-	696	668	-	760	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1274	-	-	1296	-	-	411	440	816	446	434	784
Mov Cap-2 Maneuver	-	-	-	-	-	-	411	440	-	446	434	-
Stage 1	-	-	-	-	-	-	748	693	-	715	668	-
Stage 2	-	-	-	-	-	-	650	660	-	742	684	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.4			0.5			13.9			11.7		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	456	1274	-	-	1296	-	-	604
HCM Lane V/C Ratio	0.11	0.01	-	-	0.013	-	-	0.106
HCM Control Delay (s/veh)	13.9	7.9	-	-	7.8	-	-	11.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0.4	0	-	-	0	-	-	0.4

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	69	70	28	72	12
Future Vol, veh/h	6	69	70	28	72	12
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	11	11	5	5
Mvmt Flow	7	75	76	30	78	13

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	107	0	-	0	182
Stage 1	-	-	-	-	92
Stage 2	-	-	-	-	90
Critical Hdwy	4.12	-	-	-	6.45
Critical Hdwy Stg 1	-	-	-	-	5.45
Critical Hdwy Stg 2	-	-	-	-	5.45
Follow-up Hdwy	2.218	-	-	-	3.545
Pot Cap-1 Maneuver	1484	-	-	-	801
Stage 1	-	-	-	-	924
Stage 2	-	-	-	-	926
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1483	-	-	-	795
Mov Cap-2 Maneuver	-	-	-	-	795
Stage 1	-	-	-	-	918
Stage 2	-	-	-	-	925

Approach	EB	WB	SB
HCM Control Delay, s/v	0.6	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1483	-	-	-	814
HCM Lane V/C Ratio	0.004	-	-	-	0.112
HCM Control Delay (s/veh)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.4

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	14	122	69	26	0	76	2	24	0	2	0
Future Vol, veh/h	1	14	122	69	26	0	76	2	24	0	2	0
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	3	3	6	6	6	50	50	50
Mvmt Flow	1	15	133	75	28	0	83	2	26	0	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	148	0	0	263	267	82	281	333	33
Stage 1	-	-	-	-	-	-	84	84	-	183	183	-
Stage 2	-	-	-	-	-	-	179	183	-	98	150	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.16	6.56	6.26	7.6	7	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.554	4.054	3.354	3.95	4.45	3.75
Pot Cap-1 Maneuver	1579	-	-	1427	-	-	682	632	967	585	516	918
Stage 1	-	-	-	-	-	-	914	817	-	719	666	-
Stage 2	-	-	-	-	-	-	814	741	-	803	690	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1571	-	-	1427	-	-	652	595	967	542	486	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	652	595	-	542	486	-
Stage 1	-	-	-	-	-	-	913	816	-	715	627	-
Stage 2	-	-	-	-	-	-	768	698	-	778	689	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.1			5.6			11.1			12.4		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	705	1571	-	-	1427	-	-	486
HCM Lane V/C Ratio	0.157	0.001	-	-	0.053	-	-	0.004
HCM Control Delay (s/veh)	11.1	7.3	0	-	7.7	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q (veh)	0.6	0	-	-	0.2	-	-	0

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	311	307	160	243	100	417	788	116	88	627	185
Future Volume (vph)	182	311	307	160	243	100	417	788	116	88	627	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3268		1752	3336		1770	3466		1752	3373	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	3268		1752	3336		1770	3466		1752	3373	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	311	307	160	243	100	417	788	116	88	627	185
RTOR Reduction (vph)	0	208	0	0	52	0	0	12	0	0	30	0
Lane Group Flow (vph)	182	410	0	160	291	0	417	892	0	88	782	0
Confl. Peds. (#/hr)	1		7	7		1	2					2
Confl. Bikes (#/hr)			2			2			1			1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.5	17.1		9.6	16.2		24.2	39.4		7.9	23.1	
Effective Green, g (s)	10.5	17.1		9.6	16.2		24.2	39.4		7.9	23.1	
Actuated g/C Ratio	0.12	0.19		0.11	0.18		0.27	0.44		0.09	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	208	620		186	600		475	1517		153	865	
v/s Ratio Prot	c0.10	c0.13		0.09	0.09		c0.24	0.26		0.05	c0.23	
v/s Ratio Perm												
v/c Ratio	0.88	0.66		0.86	0.49		0.88	0.59		0.58	0.90	
Uniform Delay, d1	39.1	33.8		39.5	33.2		31.5	19.2		39.4	32.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.9	5.5		31.0	2.8		16.6	0.6		5.1	12.8	
Delay (s)	70.1	39.2		70.5	36.0		48.1	19.7		44.6	45.1	
Level of Service	E	D		E	D		D	B		D	D	
Approach Delay (s/veh)		46.2			46.9			28.7			45.1	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			39.5				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			87.4%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	311	307	160	243	100	417	788	116	88	627	185
Future Volume (veh/h)	182	311	307	160	243	100	417	788	116	88	627	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	182	311	94	160	243	51	417	788	106	88	627	155
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	205	623	184	185	638	131	441	1332	179	113	670	165
Arrive On Green	0.11	0.23	0.23	0.10	0.22	0.22	0.25	0.42	0.42	0.06	0.24	0.24
Sat Flow, veh/h	1795	2708	802	1767	2898	596	1781	3142	423	1767	2792	689
Grp Volume(v), veh/h	182	204	201	160	146	148	417	446	448	88	395	387
Grp Sat Flow(s),veh/h/ln	1795	1791	1719	1767	1763	1731	1781	1777	1787	1767	1763	1719
Q Serve(g_s), s	9.0	8.9	9.2	8.0	6.3	6.6	20.7	17.4	17.4	4.4	19.8	19.9
Cycle Q Clear(g_c), s	9.0	8.9	9.2	8.0	6.3	6.6	20.7	17.4	17.4	4.4	19.8	19.9
Prop In Lane	1.00		0.47	1.00		0.34	1.00		0.24	1.00		0.40
Lane Grp Cap(c), veh/h	205	412	395	185	388	381	441	753	758	113	423	413
V/C Ratio(X)	0.89	0.49	0.51	0.87	0.38	0.39	0.94	0.59	0.59	0.78	0.93	0.94
Avail Cap(c_a), veh/h	205	412	395	185	388	381	441	753	758	198	423	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	30.1	30.2	39.7	29.8	29.9	33.2	19.9	19.9	41.5	33.5	33.5
Incr Delay (d2), s/veh	33.7	4.2	4.6	31.1	2.6	2.8	29.3	1.2	1.2	11.0	28.0	29.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.1	4.1	5.0	2.9	2.9	12.0	6.8	6.9	2.2	11.3	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	34.3	34.9	70.8	32.5	32.7	62.5	21.2	21.2	52.5	61.5	62.5
LnGrp LOS	E	C	C	E	C	C	E	C	C	D	E	E
Approach Vol, veh/h		587			454			1311			870	
Approach Delay, s/veh		46.5			46.1			34.3			61.0	
Approach LOS		D			D			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.4	24.7	26.3	25.6	14.3	23.8	9.8	42.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.4	20.7	22.3	21.6	10.3	19.8	10.1	33.8				
Max Q Clear Time (g_c+I1), s	10.0	11.2	22.7	21.9	11.0	8.6	6.4	19.4				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.0	0.0	1.2	0.1	4.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			45.4									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	369	54	23	331	19	79	92	24	27	95	81
Future Volume (vph)	88	369	54	23	331	19	79	92	24	27	95	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1786	1881	1550	1764	1845		1770	1796		1747	1707	
Flt Permitted	0.46	1.00	1.00	0.54	1.00		0.54	1.00		0.68	1.00	
Satd. Flow (perm)	856	1881	1550	1006	1845		1014	1796		1255	1707	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	88	369	54	23	331	19	79	92	24	27	95	81
RTOR Reduction (vph)	0	0	20	0	3	0	0	19	0	0	63	0
Lane Group Flow (vph)	88	369	34	23	347	0	79	97	0	27	113	0
Confl. Peds. (#/hr)	1		6	6		1			2	2		
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	42.6	37.3	37.3	34.5	33.2		9.4	9.4		9.4	9.4	
Effective Green, g (s)	42.6	37.3	37.3	34.5	33.2		9.4	9.4		9.4	9.4	
Actuated g/C Ratio	0.71	0.62	0.62	0.57	0.55		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	691	1169	963	594	1020		158	281		196	267	
v/s Ratio Prot	c0.01	c0.20		0.00	c0.19			0.05			0.07	
v/s Ratio Perm	0.08		0.02	0.02			c0.08			0.02		
v/c Ratio	0.13	0.32	0.03	0.04	0.34		0.50	0.34		0.14	0.42	
Uniform Delay, d1	3.0	5.3	4.4	5.5	7.4		23.1	22.6		21.8	22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.7	0.1	0.0	0.2		2.5	0.7		0.3	1.1	
Delay (s)	3.1	6.1	4.5	5.5	7.6		25.6	23.3		22.1	23.9	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s/veh)		5.4			7.4			24.2			23.7	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	11.7			HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio	0.35											
Actuated Cycle Length (s)	60.0			Sum of lost time (s)					12.0			
Intersection Capacity Utilization	51.2%			ICU Level of Service					A			
Analysis Period (min)	15											
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	369	54	23	331	19	79	92	24	27	95	81
Future Volume (veh/h)	88	369	54	23	331	19	79	92	24	27	95	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	88	369	34	23	331	16	79	92	7	27	95	18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	3	3	3
Cap, veh/h	730	1153	952	674	1014	49	254	278	21	267	244	46
Arrive On Green	0.06	0.61	0.61	0.03	0.57	0.57	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1795	1885	1557	1781	1767	85	1274	1716	131	1282	1508	286
Grp Volume(v), veh/h	88	369	34	23	0	347	79	0	99	27	0	113
Grp Sat Flow(s),veh/h/ln	1795	1885	1557	1781	0	1852	1274	0	1846	1282	0	1794
Q Serve(g_s), s	1.1	5.7	0.5	0.3	0.0	5.9	3.5	0.0	2.8	1.1	0.0	3.4
Cycle Q Clear(g_c), s	1.1	5.7	0.5	0.3	0.0	5.9	6.9	0.0	2.8	4.0	0.0	3.4
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.07	1.00		0.16
Lane Grp Cap(c), veh/h	730	1153	952	674	0	1063	254	0	299	267	0	290
V/C Ratio(X)	0.12	0.32	0.04	0.03	0.00	0.33	0.31	0.00	0.33	0.10	0.00	0.39
Avail Cap(c_a), veh/h	794	1153	952	805	0	1063	452	0	585	465	0	568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	0.66	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.4	5.6	4.6	4.9	0.0	6.7	25.6	0.0	22.3	24.0	0.0	22.5
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.0	0.2	0.7	0.0	0.6	0.2	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.7	0.1	0.1	0.0	1.8	1.1	0.0	1.2	0.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.4	6.1	4.7	5.0	0.0	6.9	26.3	0.0	22.9	24.2	0.0	23.3
LnGrp LOS	A	A	A	A		A	C		C	C		C
Approach Vol, veh/h	491			370			178			140		
Approach Delay, s/veh	5.7			6.8			24.4			23.5		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	40.7		13.7	7.8	38.4		13.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	23.0		19.0	6.0	23.0		19.0				
Max Q Clear Time (g_c+I1), s	2.3	7.7		8.9	3.1	7.9		6.0				
Green Ext Time (p_c), s	0.0	2.0		0.5	0.0	1.7		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	11.0											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	312	32	18	282	23	49	2	9	14	2	23
Future Vol, veh/h	41	312	32	18	282	23	49	2	9	14	2	23
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	4	4	4	2	2	2
Mvmt Flow	41	312	32	18	282	23	49	2	9	14	2	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	308	0	0	345	0	0	753	755	329	749	760	297
Stage 1	-	-	-	-	-	-	411	411	-	333	333	-
Stage 2	-	-	-	-	-	-	342	344	-	416	427	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.14	6.54	6.24	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.536	4.036	3.336	3.518	4.018	3.318
Pot Cap-1 Maneuver	1258	-	-	1214	-	-	324	335	708	328	336	742
Stage 1	-	-	-	-	-	-	614	591	-	681	644	-
Stage 2	-	-	-	-	-	-	669	633	-	614	585	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1254	-	-	1213	-	-	301	318	707	310	319	740
Mov Cap-2 Maneuver	-	-	-	-	-	-	301	318	-	310	319	-
Stage 1	-	-	-	-	-	-	593	571	-	657	632	-
Stage 2	-	-	-	-	-	-	637	622	-	584	565	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.8			0.4			18.3			13.3		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	330	1254	-	-	1213	-	-	473
HCM Lane V/C Ratio	0.182	0.033	-	-	0.015	-	-	0.082
HCM Control Delay (s/veh)	18.3	8	-	-	8	-	-	13.3
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0.7	0.1	-	-	0	-	-	0.3

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	83	91	73	64	8
Future Vol, veh/h	8	83	91	73	64	8
Conflicting Peds, #/hr	1	0	0	1	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	9	90	99	79	70	9
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	179	0	-	0	249	142
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	4.11	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.209	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1403	-	-	-	739	906
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1402	-	-	-	732	903
Mov Cap-2 Maneuver	-	-	-	-	732	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	915	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.7	0		10.4		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1402	-	-	-	748	
HCM Lane V/C Ratio	0.006	-	-	-	0.105	
HCM Control Delay (s/veh)	7.6	0	-	-	10.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.3	

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	18	116	86	17	0	147	4	124	0	3	0
Future Vol, veh/h	0	18	116	86	17	0	147	4	124	0	3	0
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	1	1	1	33	33	33
Mvmt Flow	0	20	126	93	18	0	160	4	135	0	3	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	21	0	0	148	0	0	291	292	85	360	355	21
Stage 1	-	-	-	-	-	-	85	85	-	207	207	-
Stage 2	-	-	-	-	-	-	206	207	-	153	148	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.11	6.51	6.21	7.43	6.83	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.509	4.009	3.309	3.797	4.297	3.597
Pot Cap-1 Maneuver	1582	-	-	1421	-	-	663	620	977	542	524	974
Stage 1	-	-	-	-	-	-	925	826	-	729	676	-
Stage 2	-	-	-	-	-	-	798	732	-	781	719	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1577	-	-	1418	-	-	625	576	975	440	487	971
Mov Cap-2 Maneuver	-	-	-	-	-	-	625	576	-	440	487	-
Stage 1	-	-	-	-	-	-	923	824	-	727	629	-
Stage 2	-	-	-	-	-	-	741	681	-	669	718	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	6.4	13	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	745	1577	-	-	1418	-	-	487
HCM Lane V/C Ratio	0.401	-	-	-	0.066	-	-	0.007
HCM Control Delay (s/veh)	13	0	-	-	7.7	0	-	12.4
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q (veh)	1.9	0	-	-	0.2	-	-	0

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	161	177	157	202	93	168	396	62	52	570	98
Future Volume (vph)	96	161	177	157	202	93	168	396	62	52	570	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.95		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1656	3025		1719	3276		1736	3395		1703	3330	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1656	3025		1719	3276		1736	3395		1703	3330	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	175	192	171	220	101	183	430	67	57	620	107
RTOR Reduction (vph)	0	160	0	0	80	0	0	15	0	0	19	0
Lane Group Flow (vph)	104	207	0	171	241	0	183	482	0	57	708	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.2	11.6		9.3	14.7		12.9	27.7		5.4	20.2	
Effective Green, g (s)	6.2	11.6		9.3	14.7		12.9	27.7		5.4	20.2	
Actuated g/C Ratio	0.09	0.17		0.13	0.21		0.18	0.40		0.08	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	501		228	687		319	1343		131	960	
v/s Ratio Prot	0.06	0.07		c0.10	c0.07		c0.11	0.14		0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.71	0.41		0.75	0.35		0.57	0.36		0.44	0.74	
Uniform Delay, d1	31.0	26.2		29.2	23.6		26.0	14.9		30.8	22.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.1	2.5		13.0	1.4		2.5	0.2		2.3	3.0	
Delay (s)	46.2	28.7		42.2	25.0		28.5	15.1		33.2	25.5	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s/veh)		32.5			31.0			18.7			26.0	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			26.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			65.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	161	177	157	202	93	168	396	62	52	570	98
Future Volume (veh/h)	96	161	177	157	202	93	168	396	62	52	570	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1767	1826	1826	1826	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	104	175	34	171	220	35	183	430	53	57	620	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	5	5	5	4	4	4	6	6	6
Cap, veh/h	131	831	158	199	999	157	210	980	120	83	728	104
Arrive On Green	0.08	0.30	0.30	0.11	0.33	0.33	0.12	0.31	0.31	0.05	0.24	0.24
Sat Flow, veh/h	1682	2806	533	1739	3004	471	1753	3131	384	1725	3021	433
Grp Volume(v), veh/h	104	103	106	171	126	129	183	239	244	57	353	356
Grp Sat Flow(s),veh/h/ln	1682	1678	1661	1739	1735	1740	1753	1749	1766	1725	1721	1733
Q Serve(g_s), s	4.3	3.2	3.4	6.8	3.6	3.8	7.2	7.6	7.7	2.3	13.7	13.8
Cycle Q Clear(g_c), s	4.3	3.2	3.4	6.8	3.6	3.8	7.2	7.6	7.7	2.3	13.7	13.8
Prop In Lane	1.00		0.32	1.00		0.27	1.00		0.22	1.00		0.25
Lane Grp Cap(c), veh/h	131	497	492	199	577	579	210	548	553	83	415	418
V/C Ratio(X)	0.80	0.21	0.22	0.86	0.22	0.22	0.87	0.44	0.44	0.69	0.85	0.85
Avail Cap(c_a), veh/h	173	497	492	199	577	579	210	548	553	165	455	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	18.5	18.5	30.5	16.8	16.8	30.3	19.1	19.2	32.8	25.4	25.4
Incr Delay (d2), s/veh	16.9	0.9	1.0	27.8	0.8	0.8	30.1	0.5	0.6	9.8	13.3	13.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.3	1.3	4.2	1.5	1.5	4.6	2.9	2.9	1.1	6.6	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.6	19.4	19.5	58.3	17.6	17.7	60.3	19.7	19.7	42.6	38.7	38.9
LnGrp LOS	D	B	B	E	B	B	E	B	B	D	D	D
Approach Vol, veh/h	313			426			666			766		
Approach Delay, s/veh	29.2			33.9			30.9			39.1		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	24.7	12.4	20.9	9.4	27.3	7.3	25.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	8.0	19.1	8.4	18.5	7.2	19.9	6.7	20.2				
Max Q Clear Time (g_c+I1), s	8.8	5.4	9.2	15.8	6.3	5.8	4.3	9.7				
Green Ext Time (p_c), s	0.0	0.8	0.0	1.1	0.0	1.1	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	34.1											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	152	51	55	294	20	120	59	67	17	79	66
Future Volume (vph)	37	152	51	55	294	20	120	59	67	17	79	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	1792	1490	1702	1772		1669	1587		1671	1644	
Flt Permitted	0.54	1.00	1.00	0.63	1.00		0.62	1.00		0.67	1.00	
Satd. Flow (perm)	964	1792	1490	1123	1772		1096	1587		1177	1644	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	165	55	60	320	22	130	64	73	18	86	72
RTOR Reduction (vph)	0	0	26	0	3	0	0	58	0	0	57	0
Lane Group Flow (vph)	40	165	29	60	339	0	130	79	0	18	101	0
Confl. Peds. (#/hr)	3		1	1		3	2		7	7		2
Confl. Bikes (#/hr)			1						3			
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	34.6	32.0	32.0	37.2	33.3		12.1	12.1		12.1	12.1	
Effective Green, g (s)	34.6	32.0	32.0	37.2	33.3		12.1	12.1		12.1	12.1	
Actuated g/C Ratio	0.58	0.53	0.53	0.62	0.55		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	587	955	794	733	983		221	320		237	331	
v/s Ratio Prot	0.00	0.09		c0.01	c0.19			0.05			0.06	
v/s Ratio Perm	0.04		0.02	0.05			c0.12			0.02		
v/c Ratio	0.07	0.17	0.04	0.08	0.34		0.59	0.25		0.08	0.30	
Uniform Delay, d1	5.5	7.2	6.7	4.5	7.3		21.7	20.1		19.4	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.4	0.1	0.0	0.2		4.0	0.4		0.1	0.5	
Delay (s)	5.6	7.6	6.8	4.6	7.6		25.7	20.5		19.6	20.9	
Level of Service	A	A	A	A	A		C	C		B	C	
Approach Delay (s/veh)		7.1			7.1			23.0			20.8	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			13.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			49.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	152	51	55	294	20	120	59	67	17	79	66
Future Volume (veh/h)	37	152	51	55	294	20	120	59	67	17	79	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1781	1781	1781	1796	1796	1796
Adj Flow Rate, veh/h	40	165	29	60	320	19	130	64	16	18	86	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	8	8	8	7	7	7
Cap, veh/h	645	984	814	783	940	56	309	279	70	327	303	53
Arrive On Green	0.04	0.54	0.54	0.05	0.56	0.56	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1725	1811	1499	1725	1692	100	1216	1368	342	1256	1485	259
Grp Volume(v), veh/h	40	165	29	60	0	339	130	0	80	18	0	101
Grp Sat Flow(s),veh/h/ln	1725	1811	1499	1725	0	1793	1216	0	1709	1256	0	1744
Q Serve(g_s), s	0.6	2.7	0.5	0.9	0.0	6.2	6.1	0.0	2.3	0.7	0.0	2.9
Cycle Q Clear(g_c), s	0.6	2.7	0.5	0.9	0.0	6.2	9.0	0.0	2.3	3.1	0.0	2.9
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.20	1.00		0.15
Lane Grp Cap(c), veh/h	645	984	814	783	0	996	309	0	349	327	0	356
V/C Ratio(X)	0.06	0.17	0.04	0.08	0.00	0.34	0.42	0.00	0.23	0.06	0.00	0.28
Avail Cap(c_a), veh/h	748	984	814	864	0	996	446	0	541	469	0	552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	6.9	6.4	5.1	0.0	7.3	24.0	0.0	19.9	21.2	0.0	20.2
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.0	0.0	0.2	0.9	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.9	0.1	0.2	0.0	1.9	1.7	0.0	0.9	0.2	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.6	7.2	6.4	5.2	0.0	7.5	24.9	0.0	20.3	21.3	0.0	20.6
LnGrp LOS	A	A	A	A		A	C		C	C		C
Approach Vol, veh/h	234			399			210			119		
Approach Delay, s/veh	6.8			7.2			23.1			20.7		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	36.6		16.2	6.4	37.3		16.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	23.0		19.0	6.0	23.0		19.0				
Max Q Clear Time (g_c+I1), s	2.9	4.7		11.0	2.6	8.2		5.1				
Green Ext Time (p_c), s	0.0	0.8		0.5	0.0	1.7		0.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				12.2								
HCM 6th LOS				B								

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	176	39	15	229	11	36	1	9	32	4	55
Future Vol, veh/h	20	176	39	15	229	11	36	1	9	32	4	55
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	8	8	5	5	5	2	2	2
Mvmt Flow	22	191	42	16	249	12	39	1	10	35	4	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	235	0	0	578	551	214	549	566	256
Stage 1	-	-	-	-	-	-	258	258	-	287	287	-
Stage 2	-	-	-	-	-	-	320	293	-	262	279	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.15	6.55	6.25	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.272	-	-	3.545	4.045	3.345	3.518	4.018	3.318
Pot Cap-1 Maneuver	1269	-	-	1298	-	-	423	438	818	446	434	783
Stage 1	-	-	-	-	-	-	740	689	-	720	674	-
Stage 2	-	-	-	-	-	-	685	665	-	743	680	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1269	-	-	1296	-	-	378	424	816	430	421	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	378	424	-	430	421	-
Stage 1	-	-	-	-	-	-	726	676	-	708	666	-
Stage 2	-	-	-	-	-	-	620	657	-	720	667	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.7			0.5			14.6			12.3		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	423	1269	-	-	1296	-	-	590
HCM Lane V/C Ratio	0.118	0.017	-	-	0.013	-	-	0.168
HCM Control Delay (s/veh)	14.6	7.9	-	-	7.8	-	-	12.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0.4	0.1	-	-	0	-	-	0.6

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	69	70	28	74	12
Future Vol, veh/h	6	69	70	28	74	12
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	11	11	5	5
Mvmt Flow	7	75	76	30	80	13

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	107	0	0 182 93
Stage 1	-	-	- 92 -
Stage 2	-	-	- 90 -
Critical Hdwy	4.12	-	- 6.45 6.25
Critical Hdwy Stg 1	-	-	- 5.45 -
Critical Hdwy Stg 2	-	-	- 5.45 -
Follow-up Hdwy	2.218	-	- 3.545 3.345
Pot Cap-1 Maneuver	1484	-	- 801 956
Stage 1	-	-	- 924 -
Stage 2	-	-	- 926 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1483	-	- 795 954
Mov Cap-2 Maneuver	-	-	- 795 -
Stage 1	-	-	- 918 -
Stage 2	-	-	- 925 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.6	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1483	-	-	-	814
HCM Lane V/C Ratio	0.004	-	-	-	0.115
HCM Control Delay (s/veh)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.4

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	14	124	69	26	0	76	2	24	0	2	0
Future Vol, veh/h	1	14	124	69	26	0	76	2	24	0	2	0
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	3	3	6	6	6	50	50	50
Mvmt Flow	1	15	135	75	28	0	83	2	26	0	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	150	0	0	264	268	83	282	335	33
Stage 1	-	-	-	-	-	-	85	85	-	183	183	-
Stage 2	-	-	-	-	-	-	179	183	-	99	152	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.16	6.56	6.26	7.6	7	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.554	4.054	3.354	3.95	4.45	3.75
Pot Cap-1 Maneuver	1579	-	-	1425	-	-	681	631	965	584	515	918
Stage 1	-	-	-	-	-	-	913	817	-	719	666	-
Stage 2	-	-	-	-	-	-	814	741	-	802	689	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1571	-	-	1425	-	-	651	594	965	541	485	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	651	594	-	541	485	-
Stage 1	-	-	-	-	-	-	912	816	-	715	627	-
Stage 2	-	-	-	-	-	-	768	698	-	777	688	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.1			5.6			11.1			12.5		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	704	1571	-	-	1425	-	-	485
HCM Lane V/C Ratio	0.157	0.001	-	-	0.053	-	-	0.004
HCM Control Delay (s/veh)	11.1	7.3	0	-	7.7	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q (veh)	0.6	0	-	-	0.2	-	-	0

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	315	307	166	245	106	417	788	125	98	627	185
Future Volume (vph)	182	315	307	166	245	106	417	788	125	98	627	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.95		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3269		1752	3330		1770	3461		1752	3373	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	3269		1752	3330		1770	3461		1752	3373	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	315	307	166	245	106	417	788	125	98	627	185
RTOR Reduction (vph)	0	204	0	0	56	0	0	13	0	0	30	0
Lane Group Flow (vph)	182	418	0	166	295	0	417	900	0	98	782	0
Confl. Peds. (#/hr)	1		7	7		1	2					2
Confl. Bikes (#/hr)			2			2			1			1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.5	17.1		9.8	16.4		24.0	38.8		8.3	23.1	
Effective Green, g (s)	10.5	17.1		9.8	16.4		24.0	38.8		8.3	23.1	
Actuated g/C Ratio	0.12	0.19		0.11	0.18		0.27	0.43		0.09	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	208	621		190	606		472	1492		161	865	
v/s Ratio Prot	c0.10	c0.13		0.09	0.09		c0.24	0.26		0.06	c0.23	
v/s Ratio Perm												
v/c Ratio	0.88	0.67		0.87	0.49		0.88	0.60		0.61	0.90	
Uniform Delay, d1	39.1	33.9		39.5	33.0		31.7	19.7		39.3	32.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.9	5.7		32.9	2.8		17.5	0.7		6.4	12.8	
Delay (s)	70.1	39.6		72.4	35.8		49.2	20.4		45.7	45.1	
Level of Service	E	D		E	D		D	C		D	D	
Approach Delay (s/veh)		46.5			47.5			29.4			45.2	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			39.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			87.9%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	315	307	166	245	106	417	788	125	98	627	185
Future Volume (veh/h)	182	315	307	166	245	106	417	788	125	98	627	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	182	315	94	166	245	57	417	788	115	98	627	155
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	205	619	181	188	624	142	441	1295	189	125	670	165
Arrive On Green	0.11	0.23	0.23	0.11	0.22	0.22	0.25	0.42	0.42	0.07	0.24	0.24
Sat Flow, veh/h	1795	2716	795	1767	2838	646	1781	3105	453	1767	2792	689
Grp Volume(v), veh/h	182	206	203	166	150	152	417	451	452	98	395	387
Grp Sat Flow(s),veh/h/ln	1795	1791	1720	1767	1763	1721	1781	1777	1781	1767	1763	1719
Q Serve(g_s), s	9.0	9.0	9.3	8.3	6.5	6.8	20.7	17.8	17.8	4.9	19.8	19.9
Cycle Q Clear(g_c), s	9.0	9.0	9.3	8.3	6.5	6.8	20.7	17.8	17.8	4.9	19.8	19.9
Prop In Lane	1.00		0.46	1.00		0.38	1.00		0.25	1.00		0.40
Lane Grp Cap(c), veh/h	205	408	392	188	388	379	441	741	743	125	423	413
V/C Ratio(X)	0.89	0.50	0.52	0.88	0.39	0.40	0.94	0.61	0.61	0.78	0.93	0.94
Avail Cap(c_a), veh/h	205	408	392	188	388	379	441	741	743	210	423	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	30.3	30.4	39.6	29.9	30.0	33.2	20.5	20.5	41.1	33.5	33.5
Incr Delay (d2), s/veh	33.7	4.4	4.9	33.0	2.7	2.9	29.3	1.4	1.4	10.2	28.0	29.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.2	4.2	5.2	3.0	3.0	12.0	7.1	7.1	2.4	11.3	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	34.7	35.3	72.6	32.6	33.0	62.5	21.9	21.9	51.3	61.5	62.5
LnGrp LOS	E	C	D	E	C	C	E	C	C	D	E	E
Approach Vol, veh/h		591			468			1320			880	
Approach Delay, s/veh		46.7			46.9			34.8			60.8	
Approach LOS		D			D			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	24.5	26.3	25.6	14.3	23.8	10.4	41.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.6	20.5	22.3	21.6	10.3	19.8	10.7	33.2				
Max Q Clear Time (g_c+I1), s	10.3	11.3	22.7	21.9	11.0	8.8	6.9	19.8				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.0	0.0	1.2	0.1	4.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			45.7									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	392	54	25	345	19	79	92	26	27	95	81
Future Volume (vph)	88	392	54	25	345	19	79	92	26	27	95	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1550	1764	1846		1770	1792		1747	1707	
Flt Permitted	0.44	1.00	1.00	0.53	1.00		0.54	1.00		0.68	1.00	
Satd. Flow (perm)	836	1881	1550	985	1846		1014	1792		1253	1707	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	88	392	54	25	345	19	79	92	26	27	95	81
RTOR Reduction (vph)	0	0	20	0	2	0	0	21	0	0	63	0
Lane Group Flow (vph)	88	392	34	25	362	0	79	97	0	27	113	0
Confl. Peds. (#/hr)	1		6	6		1			2	2		
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	42.6	37.3	37.3	34.5	33.2		9.4	9.4		9.4	9.4	
Effective Green, g (s)	42.6	37.3	37.3	34.5	33.2		9.4	9.4		9.4	9.4	
Actuated g/C Ratio	0.71	0.62	0.62	0.57	0.55		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	679	1169	963	583	1021		158	280		196	267	
v/s Ratio Prot	c0.01	c0.21		0.00	0.20			0.05			0.07	
v/s Ratio Perm	0.08		0.02	0.02			c0.08			0.02		
v/c Ratio	0.13	0.34	0.03	0.04	0.35		0.50	0.35		0.14	0.42	
Uniform Delay, d1	3.1	5.4	4.4	5.5	7.4		23.1	22.6		21.8	22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8	0.1	0.0	0.2		2.5	0.7		0.3	1.1	
Delay (s)	3.2	6.2	4.5	5.5	7.7		25.6	23.3		22.1	23.9	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s/veh)		5.5			7.5			24.2			23.7	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			11.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			52.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	392	54	25	345	19	79	92	26	27	95	81
Future Volume (veh/h)	88	392	54	25	345	19	79	92	26	27	95	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	88	392	34	25	345	16	79	92	9	27	95	18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	3	3	3
Cap, veh/h	719	1149	949	657	1017	47	254	271	27	265	244	46
Arrive On Green	0.06	0.61	0.61	0.03	0.57	0.57	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1795	1885	1557	1781	1771	82	1274	1676	164	1280	1508	286
Grp Volume(v), veh/h	88	392	34	25	0	361	79	0	101	27	0	113
Grp Sat Flow(s),veh/h/ln	1795	1885	1557	1781	0	1853	1274	0	1840	1280	0	1794
Q Serve(g_s), s	1.1	6.1	0.5	0.3	0.0	6.2	3.5	0.0	2.9	1.1	0.0	3.4
Cycle Q Clear(g_c), s	1.1	6.1	0.5	0.3	0.0	6.2	6.9	0.0	2.9	4.1	0.0	3.4
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.09	1.00		0.16
Lane Grp Cap(c), veh/h	719	1149	949	657	0	1064	254	0	298	265	0	290
V/C Ratio(X)	0.12	0.34	0.04	0.04	0.00	0.34	0.31	0.00	0.34	0.10	0.00	0.39
Avail Cap(c_a), veh/h	783	1149	949	770	0	1064	452	0	583	463	0	568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.64	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.4	5.8	4.7	4.9	0.0	6.8	25.6	0.0	22.3	24.1	0.0	22.5
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.0	0.2	0.7	0.0	0.7	0.2	0.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.9	0.1	0.1	0.0	1.8	1.1	0.0	1.2	0.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.5	6.3	4.7	5.0	0.0	6.9	26.3	0.0	23.0	24.3	0.0	23.3
LnGrp LOS	A	A	A	A		A	C		C	C		C
Approach Vol, veh/h		514			386			180			140	
Approach Delay, s/veh		5.9			6.8			24.4			23.5	
Approach LOS		A			A			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	40.6		13.7	7.8	38.4		13.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	5.5	23.5		19.0	6.0	23.0		19.0				
Max Q Clear Time (g_c+I1), s	2.3	8.1		8.9	3.1	8.2		6.1				
Green Ext Time (p_c), s	0.0	2.1		0.5	0.0	1.8		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				10.9								
HCM 6th LOS				B								

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	312	32	18	282	37	49	2	9	23	3	39
Future Vol, veh/h	66	312	32	18	282	37	49	2	9	23	3	39
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	4	4	4	2	2	2
Mvmt Flow	66	312	32	18	282	37	49	2	9	23	3	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	322	0	0	345	0	0	819	819	329	806	817	304
Stage 1	-	-	-	-	-	-	461	461	-	340	340	-
Stage 2	-	-	-	-	-	-	358	358	-	466	477	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.14	6.54	6.24	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.536	4.036	3.336	3.518	4.018	3.318
Pot Cap-1 Maneuver	1244	-	-	1214	-	-	292	308	708	300	311	736
Stage 1	-	-	-	-	-	-	577	562	-	675	639	-
Stage 2	-	-	-	-	-	-	656	624	-	577	556	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1240	-	-	1213	-	-	260	286	707	279	289	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	286	-	279	289	-
Stage 1	-	-	-	-	-	-	546	532	-	637	627	-
Stage 2	-	-	-	-	-	-	609	613	-	537	526	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.3			0.4			20.8			14.5		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	288	1240	-	-	1213	-	-	445
HCM Lane V/C Ratio	0.208	0.053	-	-	0.015	-	-	0.146
HCM Control Delay (s/veh)	20.8	8.1	-	-	8	-	-	14.5
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0.8	0.2	-	-	0	-	-	0.5

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	83	91	75	65	8
Future Vol, veh/h	8	83	91	75	65	8
Conflicting Peds, #/hr	1	0	0	1	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	9	90	99	82	71	9
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	182	0	-	0	250	143
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	4.11	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.209	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1399	-	-	-	739	905
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1398	-	-	-	732	902
Mov Cap-2 Maneuver	-	-	-	-	732	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	915	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.7	0		10.4		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1398	-	-	-	747	
HCM Lane V/C Ratio	0.006	-	-	-	0.106	
HCM Control Delay (s/veh)	7.6	0	-	-	10.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.4	

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	8.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	18	117	86	17	0	149	4	124	0	3	0
Future Vol, veh/h	0	18	117	86	17	0	149	4	124	0	3	0
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	1	1	1	33	33	33
Mvmt Flow	0	20	127	93	18	0	162	4	135	0	3	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	21	0	0	149	0	0	292	293	86	360	356	21
Stage 1	-	-	-	-	-	-	86	86	-	207	207	-
Stage 2	-	-	-	-	-	-	206	207	-	153	149	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.11	6.51	6.21	7.43	6.83	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.509	4.009	3.309	3.797	4.297	3.597
Pot Cap-1 Maneuver	1582	-	-	1420	-	-	662	620	976	542	523	974
Stage 1	-	-	-	-	-	-	924	826	-	729	676	-
Stage 2	-	-	-	-	-	-	798	732	-	781	718	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1577	-	-	1417	-	-	624	576	974	440	486	971
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	576	-	440	486	-
Stage 1	-	-	-	-	-	-	922	824	-	727	629	-
Stage 2	-	-	-	-	-	-	741	681	-	669	717	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	6.4	13.1	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	743	1577	-	-	1417	-	-	486
HCM Lane V/C Ratio	0.405	-	-	-	0.066	-	-	0.007
HCM Control Delay (s/veh)	13.1	0	-	-	7.7	0	-	12.5
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q (veh)	2	0	-	-	0.2	-	-	0

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	171	190	159	214	90	180	427	65	52	614	106
Future Volume (vph)	104	171	190	159	214	90	180	427	65	52	614	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.96		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1656	3023		1719	3285		1736	3396		1703	3331	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1656	3023		1719	3285		1736	3396		1703	3331	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	186	207	173	233	98	196	464	71	57	667	115
RTOR Reduction (vph)	0	174	0	0	73	0	0	15	0	0	19	0
Lane Group Flow (vph)	113	219	0	173	258	0	196	520	0	57	763	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.3	11.1		9.1	13.9		13.3	28.5		5.3	20.5	
Effective Green, g (s)	6.3	11.1		9.1	13.9		13.3	28.5		5.3	20.5	
Actuated g/C Ratio	0.09	0.16		0.13	0.20		0.19	0.41		0.08	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	479		223	652		329	1382		128	975	
v/s Ratio Prot	0.07	0.07		c0.10	c0.08		c0.11	0.15		0.03	c0.23	
v/s Ratio Perm												
v/c Ratio	0.76	0.46		0.78	0.40		0.60	0.38		0.45	0.78	
Uniform Delay, d1	31.1	26.7		29.5	24.4		25.9	14.5		30.9	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.6	3.1		15.5	1.8		2.9	0.2		2.5	4.2	
Delay (s)	50.7	29.8		44.9	26.2		28.8	14.7		33.4	26.9	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s/veh)		34.5			32.6			18.5			27.3	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.3									
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			70.0									
Intersection Capacity Utilization			67.5%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	171	190	159	214	90	180	427	65	52	614	106
Future Volume (veh/h)	104	171	190	159	214	90	180	427	65	52	614	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1767	1826	1826	1826	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	113	186	34	173	233	34	196	464	57	57	667	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	5	5	5	4	4	4	6	6	6
Cap, veh/h	142	788	141	199	937	135	223	1038	127	83	760	110
Arrive On Green	0.08	0.28	0.28	0.11	0.31	0.31	0.13	0.33	0.33	0.05	0.25	0.25
Sat Flow, veh/h	1682	2836	508	1739	3042	438	1753	3132	383	1725	3015	438
Grp Volume(v), veh/h	113	109	111	173	132	135	196	258	263	57	380	384
Grp Sat Flow(s),veh/h/ln	1682	1678	1665	1739	1735	1746	1753	1749	1766	1725	1721	1732
Q Serve(g_s), s	4.6	3.5	3.6	6.8	4.0	4.1	7.7	8.1	8.2	2.3	14.9	14.9
Cycle Q Clear(g_c), s	4.6	3.5	3.6	6.8	4.0	4.1	7.7	8.1	8.2	2.3	14.9	14.9
Prop In Lane	1.00		0.30	1.00		0.25	1.00		0.22	1.00		0.25
Lane Grp Cap(c), veh/h	142	467	463	199	534	538	223	579	585	83	434	437
V/C Ratio(X)	0.80	0.23	0.24	0.87	0.25	0.25	0.88	0.45	0.45	0.69	0.88	0.88
Avail Cap(c_a), veh/h	183	467	463	199	534	538	223	579	585	165	455	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	19.5	19.6	30.5	18.1	18.2	30.0	18.4	18.4	32.8	25.1	25.2
Incr Delay (d2), s/veh	16.9	1.2	1.2	29.4	1.0	1.0	30.5	0.5	0.5	9.8	16.9	17.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.4	1.4	4.3	1.6	1.7	4.9	3.0	3.1	1.1	7.5	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.4	20.7	20.8	59.9	19.1	19.2	60.6	18.9	18.9	42.6	42.0	42.2
LnGrp LOS	D	C	C	E	B	B	E	B	B	D	D	D
Approach Vol, veh/h	333		440				717			821		
Approach Delay, s/veh	30.1		35.2				30.3			42.1		
Approach LOS	C		D				C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	23.5	12.9	21.6	9.9	25.6	7.3	27.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	8.0	18.6	8.9	18.5	7.6	19.0	6.7	20.7				
Max Q Clear Time (g_c+I1), s	8.8	5.6	9.7	16.9	6.6	6.1	4.3	10.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.7	0.0	1.1	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	35.4											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	154	55	58	294	21	129	63	71	18	86	71
Future Volume (vph)	39	154	55	58	294	21	129	63	71	18	86	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	1792	1490	1702	1771		1669	1588		1671	1645	
Flt Permitted	0.54	1.00	1.00	0.63	1.00		0.60	1.00		0.66	1.00	
Satd. Flow (perm)	958	1792	1490	1121	1771		1057	1588		1156	1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	167	60	63	320	23	140	68	77	20	93	77
RTOR Reduction (vph)	0	0	29	0	3	0	0	61	0	0	58	0
Lane Group Flow (vph)	42	167	32	63	340	0	140	84	0	20	112	0
Confl. Peds. (#/hr)	3		1	1		3	2		7	7		2
Confl. Bikes (#/hr)			1						3			
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	34.0	31.5	31.5	36.6	32.8		12.7	12.7		12.7	12.7	
Effective Green, g (s)	34.0	31.5	31.5	36.6	32.8		12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.57	0.53	0.53	0.61	0.55		0.21	0.21		0.21	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	573	940	782	720	968		223	336		244	348	
v/s Ratio Prot	0.00	0.09		c0.01	c0.19			0.05			0.07	
v/s Ratio Perm	0.04		0.02	0.05			c0.13			0.02		
v/c Ratio	0.07	0.18	0.04	0.09	0.35		0.63	0.25		0.08	0.32	
Uniform Delay, d1	5.8	7.5	6.9	4.8	7.6		21.5	19.7		19.0	20.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4	0.1	0.1	0.2		5.4	0.4		0.1	0.5	
Delay (s)	5.8	7.9	7.0	4.8	7.9		26.9	20.1		19.1	20.6	
Level of Service	A	A	A	A	A		C	C		B	C	
Approach Delay (s/veh)		7.4			7.4			23.4			20.4	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			13.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			50.8%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	154	55	58	294	21	129	63	71	18	86	71
Future Volume (veh/h)	39	154	55	58	294	21	129	63	71	18	86	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1781	1781	1781	1796	1796	1796
Adj Flow Rate, veh/h	42	167	31	63	320	20	140	68	16	20	93	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	8	8	8	7	7	7
Cap, veh/h	630	960	794	765	914	57	316	299	70	340	315	61
Arrive On Green	0.04	0.53	0.53	0.05	0.54	0.54	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1725	1811	1499	1725	1686	105	1206	1387	326	1252	1458	282
Grp Volume(v), veh/h	42	167	31	63	0	340	140	0	84	20	0	111
Grp Sat Flow(s),veh/h/ln	1725	1811	1499	1725	0	1792	1206	0	1713	1252	0	1740
Q Serve(g_s), s	0.6	2.9	0.6	0.9	0.0	6.4	6.6	0.0	2.4	0.8	0.0	3.2
Cycle Q Clear(g_c), s	0.6	2.9	0.6	0.9	0.0	6.4	9.8	0.0	2.4	3.2	0.0	3.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.19	1.00		0.16
Lane Grp Cap(c), veh/h	630	960	794	765	0	971	316	0	370	340	0	376
V/C Ratio(X)	0.07	0.17	0.04	0.08	0.00	0.35	0.44	0.00	0.23	0.06	0.00	0.30
Avail Cap(c_a), veh/h	730	960	794	845	0	971	438	0	542	466	0	551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	7.3	6.8	5.5	0.0	7.8	23.8	0.0	19.4	20.7	0.0	19.7
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.0	0.0	0.2	1.0	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.2	0.3	0.0	2.0	1.8	0.0	0.9	0.2	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.0	7.6	6.8	5.5	0.0	8.0	24.8	0.0	19.7	20.8	0.0	20.1
LnGrp LOS	A	A	A	A		A	C		B	C		C
Approach Vol, veh/h	240			403			224			131		
Approach Delay, s/veh	7.2			7.6			22.9			20.2		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	35.8		17.0	6.5	36.5		17.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	23.0		19.0	6.0	23.0		19.0				
Max Q Clear Time (g_c+I1), s	2.9	4.9		11.8	2.6	8.4		5.2				
Green Ext Time (p_c), s	0.0	0.9		0.5	0.0	1.7		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	12.6											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	189	42	16	246	7	38	1	10	21	2	36
Future Vol, veh/h	12	189	42	16	246	7	38	1	10	21	2	36
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	8	8	5	5	5	2	2	2
Mvmt Flow	13	205	46	17	267	8	41	1	11	23	2	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	275	0	0	253	0	0	583	565	230	565	584	272
Stage 1	-	-	-	-	-	-	256	256	-	305	305	-
Stage 2	-	-	-	-	-	-	327	309	-	260	279	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.15	6.55	6.25	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.272	-	-	3.545	4.045	3.345	3.518	4.018	3.318
Pot Cap-1 Maneuver	1254	-	-	1278	-	-	419	430	802	436	423	767
Stage 1	-	-	-	-	-	-	742	690	-	705	662	-
Stage 2	-	-	-	-	-	-	679	654	-	745	680	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1254	-	-	1276	-	-	388	419	800	422	412	766
Mov Cap-2 Maneuver	-	-	-	-	-	-	388	419	-	422	412	-
Stage 1	-	-	-	-	-	-	733	682	-	698	653	-
Stage 2	-	-	-	-	-	-	633	645	-	726	672	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.4	0.5	14.5	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	434	1254	-	-	1276	-	-	581
HCM Lane V/C Ratio	0.123	0.01	-	-	0.014	-	-	0.11
HCM Control Delay (s/veh)	14.5	7.9	-	-	7.9	-	-	12
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0.4	0	-	-	0	-	-	0.4

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	74	75	30	77	12
Future Vol, veh/h	7	74	75	30	77	12
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	11	11	5	5
Mvmt Flow	8	80	82	33	84	13
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	116	0	-	0	197	101
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	4.12	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.218	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	1473	-	-	-	785	946
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1472	-	-	-	779	944
Mov Cap-2 Maneuver	-	-	-	-	779	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	918	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.6	0		10.1		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1472	-	-	-	798	
HCM Lane V/C Ratio	0.005	-	-	-	0.121	
HCM Control Delay (s/veh)	7.5	0	-	-	10.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.4	

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	15	131	74	28	0	82	2	26	0	2	0
Future Vol, veh/h	1	15	131	74	28	0	82	2	26	0	2	0
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	3	3	6	6	6	50	50	50
Mvmt Flow	1	16	142	80	30	0	89	2	28	0	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	158	0	0	280	284	87	299	355	35
Stage 1	-	-	-	-	-	-	89	89	-	195	195	-
Stage 2	-	-	-	-	-	-	191	195	-	104	160	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.16	6.56	6.26	7.6	7	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.554	4.054	3.354	3.95	4.45	3.75
Pot Cap-1 Maneuver	1576	-	-	1416	-	-	664	618	961	569	501	916
Stage 1	-	-	-	-	-	-	909	813	-	708	658	-
Stage 2	-	-	-	-	-	-	802	732	-	797	683	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1568	-	-	1416	-	-	632	579	961	524	469	912
Mov Cap-2 Maneuver	-	-	-	-	-	-	632	579	-	524	469	-
Stage 1	-	-	-	-	-	-	908	812	-	704	617	-
Stage 2	-	-	-	-	-	-	754	687	-	771	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	5.6	11.4	12.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	686	1568	-	-	1416	-	-	469
HCM Lane V/C Ratio	0.174	0.001	-	-	0.057	-	-	0.005
HCM Control Delay (s/veh)	11.4	7.3	0	-	7.7	0	-	12.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q (veh)	0.6	0	-	-	0.2	-	-	0

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	332	325	171	258	107	442	849	124	93	676	197
Future Volume (vph)	194	332	325	171	258	107	442	849	124	93	676	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3269		1752	3335		1770	3466		1752	3374	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	3269		1752	3335		1770	3466		1752	3374	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	332	325	171	258	107	442	849	124	93	676	197
RTOR Reduction (vph)	0	207	0	0	53	0	0	12	0	0	30	0
Lane Group Flow (vph)	194	450	0	171	312	0	442	961	0	93	843	0
Confl. Peds. (#/hr)	1		7	7		1	2					2
Confl. Bikes (#/hr)			2			2			1			1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	16.0		9.8	15.4		24.6	40.3		7.9	23.6	
Effective Green, g (s)	10.4	16.0		9.8	15.4		24.6	40.3		7.9	23.6	
Actuated g/C Ratio	0.12	0.18		0.11	0.17		0.27	0.45		0.09	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	206	581		190	570		483	1551		153	884	
v/s Ratio Prot	c0.11	c0.14		0.10	0.09		c0.25	0.28		0.05	c0.25	
v/s Ratio Perm												
v/c Ratio	0.94	0.77		0.90	0.55		0.92	0.62		0.61	0.95	
Uniform Delay, d1	39.5	35.3		39.6	34.1		31.7	19.0		39.6	32.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	46.2	9.7		38.6	3.7		21.9	0.7		6.7	19.9	
Delay (s)	85.7	45.0		78.2	37.9		53.6	19.7		46.2	52.5	
Level of Service	F	D		E	D		D	B		D	D	
Approach Delay (s/veh)		54.3			50.7			30.3			51.9	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			44.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			92.3%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	332	325	171	258	107	442	849	124	93	676	197
Future Volume (veh/h)	194	332	325	171	258	107	442	849	124	93	676	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	194	332	115	171	258	58	442	849	114	93	676	168
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	207	568	193	192	603	133	447	1346	181	119	682	169
Arrive On Green	0.12	0.22	0.22	0.11	0.21	0.21	0.25	0.43	0.43	0.07	0.24	0.24
Sat Flow, veh/h	1795	2607	885	1767	2857	630	1781	3142	422	1767	2789	692
Grp Volume(v), veh/h	194	226	221	171	157	159	442	480	483	93	427	417
Grp Sat Flow(s),veh/h/ln	1795	1791	1701	1767	1763	1724	1781	1777	1787	1767	1763	1718
Q Serve(g_s), s	9.6	10.2	10.5	8.6	6.9	7.2	22.2	19.1	19.1	4.7	21.7	21.8
Cycle Q Clear(g_c), s	9.6	10.2	10.5	8.6	6.9	7.2	22.2	19.1	19.1	4.7	21.7	21.8
Prop In Lane	1.00		0.52	1.00		0.37	1.00		0.24	1.00		0.40
Lane Grp Cap(c), veh/h	207	390	370	192	372	364	447	761	765	119	431	420
V/C Ratio(X)	0.94	0.58	0.60	0.89	0.42	0.44	0.99	0.63	0.63	0.78	0.99	0.99
Avail Cap(c_a), veh/h	207	390	370	192	372	364	447	761	765	204	431	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	31.5	31.6	39.6	30.7	30.8	33.6	20.2	20.2	41.3	33.9	33.9
Incr Delay (d2), s/veh	44.5	6.2	6.9	33.8	3.2	3.5	39.3	1.7	1.7	10.5	40.9	41.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	4.9	4.8	5.4	3.2	3.3	13.9	7.6	7.6	2.3	13.7	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.0	37.7	38.6	73.4	34.0	34.3	72.9	21.8	21.8	51.9	74.9	75.8
LnGrp LOS	F	D	D	E	C	C	E	C	C	D	E	E
Approach Vol, veh/h		641			487			1405			937	
Approach Delay, s/veh		52.0			47.9			37.9			73.0	
Approach LOS		D			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.8	23.6	26.6	26.0	14.4	23.0	10.1	42.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.8	19.6	22.6	22.0	10.4	19.0	10.4	34.2				
Max Q Clear Time (g_c+l1), s	10.6	12.5	24.2	23.8	11.6	9.2	6.7	21.1				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.0	1.2	0.1	4.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			51.4									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	392	58	25	353	20	85	99	25	29	103	87
Future Volume (vph)	94	392	58	25	353	20	85	99	25	29	103	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1550	1764	1846		1770	1798		1748	1707	
Flt Permitted	0.43	1.00	1.00	0.53	1.00		0.51	1.00		0.68	1.00	
Satd. Flow (perm)	816	1881	1550	985	1846		959	1798		1246	1707	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	392	58	25	353	20	85	99	25	29	103	87
RTOR Reduction (vph)	0	0	22	0	3	0	0	18	0	0	62	0
Lane Group Flow (vph)	94	392	36	25	370	0	85	106	0	29	128	0
Confl. Peds. (#/hr)	1		6	6		1			2	2		
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	42.1	36.8	36.8	33.9	32.6		9.9	9.9		9.9	9.9	
Effective Green, g (s)	42.1	36.8	36.8	33.9	32.6		9.9	9.9		9.9	9.9	
Actuated g/C Ratio	0.70	0.61	0.61	0.56	0.54		0.17	0.17		0.17	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	661	1153	950	573	1002		158	296		205	281	
v/s Ratio Prot	c0.01	c0.21		0.00	c0.20			0.06			0.08	
v/s Ratio Perm	0.09		0.02	0.02			c0.09			0.02		
v/c Ratio	0.14	0.34	0.04	0.04	0.37		0.54	0.36		0.14	0.46	
Uniform Delay, d1	3.3	5.7	4.6	5.8	7.8		23.0	22.2		21.4	22.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8	0.1	0.0	0.2		3.5	0.7		0.3	1.2	
Delay (s)	3.4	6.5	4.7	5.8	8.1		26.5	23.0		21.7	23.8	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s/veh)		5.7			7.9			24.4			23.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			53.8%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	392	58	25	353	20	85	99	25	29	103	87
Future Volume (veh/h)	94	392	58	25	353	20	85	99	25	29	103	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	94	392	36	25	353	17	85	99	8	29	103	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	3	3	3
Cap, veh/h	696	1125	929	641	989	48	259	298	24	278	250	61
Arrive On Green	0.07	0.60	0.60	0.03	0.56	0.56	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1795	1885	1557	1781	1767	85	1257	1707	138	1273	1433	348
Grp Volume(v), veh/h	94	392	36	25	0	370	85	0	107	29	0	128
Grp Sat Flow(s),veh/h/ln	1795	1885	1557	1781	0	1852	1257	0	1845	1273	0	1781
Q Serve(g_s), s	1.2	6.3	0.6	0.4	0.0	6.6	3.9	0.0	3.0	1.2	0.0	3.8
Cycle Q Clear(g_c), s	1.2	6.3	0.6	0.4	0.0	6.6	7.7	0.0	3.0	4.3	0.0	3.8
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.07	1.00		0.20
Lane Grp Cap(c), veh/h	696	1125	929	641	0	1036	259	0	322	278	0	311
V/C Ratio(X)	0.14	0.35	0.04	0.04	0.00	0.36	0.33	0.00	0.33	0.10	0.00	0.41
Avail Cap(c_a), veh/h	757	1125	929	754	0	1036	438	0	584	459	0	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	0.55	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	6.2	5.0	5.3	0.0	7.3	25.4	0.0	21.7	23.6	0.0	22.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.0	0.2	0.7	0.0	0.6	0.2	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.9	0.1	0.1	0.0	2.0	1.1	0.0	1.3	0.4	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.8	6.6	5.0	5.3	0.0	7.5	26.2	0.0	22.3	23.7	0.0	22.9
LnGrp LOS	A	A	A	A		A	C		C	C		C
Approach Vol, veh/h	522			395			192			157		
Approach Delay, s/veh	6.2			7.4			24.0			23.0		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	39.8		14.5	8.0	37.6		14.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	5.5	23.5		19.0	6.0	23.0		19.0				
Max Q Clear Time (g_c+I1), s	2.4	8.3		9.7	3.2	8.6		6.3				
Green Ext Time (p_c), s	0.0	2.1		0.5	0.0	1.8		0.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				11.3								
HCM 6th LOS				B								

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	335	34	19	302	23	52	2	10	14	2	23
Future Vol, veh/h	41	335	34	19	302	23	52	2	10	14	2	23
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	4	4	4	2	2	2
Mvmt Flow	41	335	34	19	302	23	52	2	10	14	2	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	328	0	0	370	0	0	799	801	353	795	807	317
Stage 1	-	-	-	-	-	-	435	435	-	355	355	-
Stage 2	-	-	-	-	-	-	364	366	-	440	452	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.14	6.54	6.24	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.536	4.036	3.336	3.518	4.018	3.318
Pot Cap-1 Maneuver	1237	-	-	1189	-	-	301	315	686	305	315	724
Stage 1	-	-	-	-	-	-	596	577	-	662	630	-
Stage 2	-	-	-	-	-	-	651	619	-	596	570	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1233	-	-	1188	-	-	279	299	685	287	299	722
Mov Cap-2 Maneuver	-	-	-	-	-	-	279	299	-	287	299	-
Stage 1	-	-	-	-	-	-	576	557	-	638	618	-
Stage 2	-	-	-	-	-	-	618	607	-	566	551	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.8			0.4			19.7			13.8		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	308	1233	-	-	1188	-	-	447
HCM Lane V/C Ratio	0.208	0.033	-	-	0.016	-	-	0.087
HCM Control Delay (s/veh)	19.7	8	-	-	8.1	-	-	13.8
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0.8	0.1	-	-	0	-	-	0.3

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	90	97	78	68	9
Future Vol, veh/h	9	90	97	78	68	9
Conflicting Peds, #/hr	1	0	0	1	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	10	98	105	85	74	10
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	191	0	-	0	268	151
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	119	-
Critical Hdwy	4.11	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.209	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1389	-	-	-	721	895
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1388	-	-	-	714	892
Mov Cap-2 Maneuver	-	-	-	-	714	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	905	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.7	0		10.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1388	-	-	-	731	
HCM Lane V/C Ratio	0.007	-	-	-	0.114	
HCM Control Delay (s/veh)	7.6	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.4	

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	19	124	92	18	0	158	5	134	0	3	0
Future Vol, veh/h	0	19	124	92	18	0	158	5	134	0	3	0
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	1	1	1	33	33	33
Mvmt Flow	0	21	135	100	20	0	172	5	146	0	3	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	158	0	0	313	314	91	387	381	23
Stage 1	-	-	-	-	-	-	91	91	-	223	223	-
Stage 2	-	-	-	-	-	-	222	223	-	164	158	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.11	6.51	6.21	7.43	6.83	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.509	4.009	3.309	3.797	4.297	3.597
Pot Cap-1 Maneuver	1579	-	-	1409	-	-	642	603	969	520	506	971
Stage 1	-	-	-	-	-	-	919	821	-	714	665	-
Stage 2	-	-	-	-	-	-	783	721	-	770	712	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1574	-	-	1406	-	-	602	557	967	413	467	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	602	557	-	413	467	-
Stage 1	-	-	-	-	-	-	917	819	-	712	615	-
Stage 2	-	-	-	-	-	-	723	667	-	650	711	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	6.5	13.9	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	724	1574	-	-	1406	-	-	467
HCM Lane V/C Ratio	0.446	-	-	-	0.071	-	-	0.007
HCM Control Delay (s/veh)	13.9	0	-	-	7.8	0	-	12.8
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q (veh)	2.3	0	-	-	0.2	-	-	0

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	173	190	167	216	98	180	427	67	55	614	106
Future Volume (vph)	104	173	190	167	216	98	180	427	67	55	614	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.95		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1656	3025		1719	3277		1736	3394		1703	3331	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1656	3025		1719	3277		1736	3394		1703	3331	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	188	207	182	235	107	196	464	73	60	667	115
RTOR Reduction (vph)	0	175	0	0	84	0	0	15	0	0	19	0
Lane Group Flow (vph)	113	220	0	182	258	0	196	522	0	60	763	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.3	10.7		9.2	13.6		13.6	28.6		5.5	20.5	
Effective Green, g (s)	6.3	10.7		9.2	13.6		13.6	28.6		5.5	20.5	
Actuated g/C Ratio	0.09	0.15		0.13	0.19		0.19	0.41		0.08	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	462		225	636		337	1386		133	975	
v/s Ratio Prot	0.07	0.07		c0.11	c0.08		c0.11	0.15		0.04	c0.23	
v/s Ratio Perm												
v/c Ratio	0.76	0.48		0.81	0.41		0.58	0.38		0.45	0.78	
Uniform Delay, d1	31.1	27.1		29.5	24.7		25.6	14.5		30.8	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.6	3.5		18.9	1.9		2.5	0.2		2.4	4.2	
Delay (s)	50.7	30.6		48.4	26.6		28.2	14.6		33.2	26.9	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s/veh)		35.0			34.2			18.3			27.3	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.7			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			67.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	173	190	167	216	98	180	427	67	55	614	106
Future Volume (veh/h)	104	173	190	167	216	98	180	427	67	55	614	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1767	1826	1826	1826	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	113	188	34	182	235	43	196	464	59	60	667	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	5	5	5	4	4	4	6	6	6
Cap, veh/h	142	806	143	199	921	166	213	1011	128	85	760	110
Arrive On Green	0.08	0.28	0.28	0.11	0.31	0.31	0.12	0.32	0.32	0.05	0.25	0.25
Sat Flow, veh/h	1682	2841	504	1739	2935	528	1753	3118	394	1725	3015	438
Grp Volume(v), veh/h	113	109	113	182	137	141	196	259	264	60	380	384
Grp Sat Flow(s),veh/h/ln	1682	1678	1666	1739	1735	1729	1753	1749	1763	1725	1721	1732
Q Serve(g_s), s	4.6	3.5	3.6	7.2	4.1	4.3	7.7	8.2	8.3	2.4	14.9	14.9
Cycle Q Clear(g_c), s	4.6	3.5	3.6	7.2	4.1	4.3	7.7	8.2	8.3	2.4	14.9	14.9
Prop In Lane	1.00		0.30	1.00		0.31	1.00		0.22	1.00		0.25
Lane Grp Cap(c), veh/h	142	476	473	199	544	542	213	567	572	85	434	437
V/C Ratio(X)	0.80	0.23	0.24	0.92	0.25	0.26	0.92	0.46	0.46	0.71	0.88	0.88
Avail Cap(c_a), veh/h	183	476	473	199	544	542	213	567	572	168	455	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	19.2	19.3	30.7	17.9	17.9	30.4	18.8	18.8	32.8	25.1	25.2
Incr Delay (d2), s/veh	16.9	1.1	1.2	38.6	1.0	1.1	40.4	0.6	0.6	10.3	16.9	17.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.4	1.4	5.0	1.7	1.7	5.4	3.1	3.1	1.2	7.5	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.4	20.3	20.4	69.2	18.9	19.0	70.8	19.3	19.4	43.1	42.0	42.2
LnGrp LOS	D	C	C	E	B	B	E	B	B	D	D	D
Approach Vol, veh/h	335			460			719			824		
Approach Delay, s/veh	29.8			38.8			33.4			42.2		
Approach LOS	C			D			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	23.9	12.5	21.6	9.9	26.0	7.4	26.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	8.0	19.0	8.5	18.5	7.6	19.4	6.8	20.2				
Max Q Clear Time (g_c+I1), s	9.2	5.6	9.7	16.9	6.6	6.3	4.4	10.3				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.7	0.0	1.2	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	37.0											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	161	55	59	312	21	129	63	72	18	86	71
Future Volume (vph)	39	161	55	59	312	21	129	63	72	18	86	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	1792	1490	1702	1773		1669	1587		1671	1645	
Flt Permitted	0.52	1.00	1.00	0.62	1.00		0.60	1.00		0.65	1.00	
Satd. Flow (perm)	932	1792	1490	1109	1773		1057	1587		1152	1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	175	60	64	339	23	140	68	78	20	93	77
RTOR Reduction (vph)	0	0	29	0	3	0	0	61	0	0	58	0
Lane Group Flow (vph)	42	175	32	64	359	0	140	85	0	20	112	0
Confl. Peds. (#/hr)	3		1	1		3	2		7	7		2
Confl. Bikes (#/hr)			1						3			
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	33.9	31.5	31.5	36.7	32.9		12.7	12.7		12.7	12.7	
Effective Green, g (s)	33.9	31.5	31.5	36.7	32.9		12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.56	0.53	0.53	0.61	0.55		0.21	0.21		0.21	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	557	940	782	715	972		223	335		243	348	
v/s Ratio Prot	0.00	0.10		c0.01	c0.20			0.05			0.07	
v/s Ratio Perm	0.04		0.02	0.05			c0.13			0.02		
v/c Ratio	0.08	0.19	0.04	0.09	0.37		0.63	0.25		0.08	0.32	
Uniform Delay, d1	5.8	7.5	6.9	4.7	7.7		21.5	19.7		19.0	20.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4	0.1	0.1	0.2		5.4	0.4		0.1	0.5	
Delay (s)	5.9	7.9	7.0	4.8	7.9		26.9	20.1		19.1	20.6	
Level of Service	A		A	A	A		C	C		B	C	
Approach Delay (s/veh)		7.4			7.4			23.4			20.4	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			13.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			51.7%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	161	55	59	312	21	129	63	72	18	86	71
Future Volume (veh/h)	39	161	55	59	312	21	129	63	72	18	86	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1781	1781	1781	1796	1796	1796
Adj Flow Rate, veh/h	42	175	31	64	339	20	140	68	17	20	93	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	8	8	8	7	7	7
Cap, veh/h	615	959	793	759	918	54	316	295	74	339	315	61
Arrive On Green	0.04	0.53	0.53	0.05	0.54	0.54	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1725	1811	1499	1725	1693	100	1206	1368	342	1251	1458	282
Grp Volume(v), veh/h	42	175	31	64	0	359	140	0	85	20	0	111
Grp Sat Flow(s), veh/h/ln	1725	1811	1499	1725	0	1793	1206	0	1710	1251	0	1740
Q Serve(g_s), s	0.6	3.0	0.6	1.0	0.0	6.9	6.6	0.0	2.5	0.8	0.0	3.2
Cycle Q Clear(g_c), s	0.6	3.0	0.6	1.0	0.0	6.9	9.8	0.0	2.5	3.3	0.0	3.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.20	1.00		0.16
Lane Grp Cap(c), veh/h	615	959	793	759	0	972	316	0	369	339	0	376
V/C Ratio(X)	0.07	0.18	0.04	0.08	0.00	0.37	0.44	0.00	0.23	0.06	0.00	0.30
Avail Cap(c_a), veh/h	704	959	793	826	0	972	438	0	541	465	0	551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	7.4	6.8	5.5	0.0	7.9	23.8	0.0	19.4	20.8	0.0	19.7
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.0	0.0	0.2	1.0	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.2	0.3	0.0	2.1	1.8	0.0	0.9	0.2	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.0	7.7	6.9	5.5	0.0	8.1	24.8	0.0	19.7	20.8	0.0	20.1
LnGrp LOS	A	A	A	A		A	C		B	C		C
Approach Vol, veh/h	248			423			225			131		
Approach Delay, s/veh	7.3			7.7			22.9			20.2		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	35.8		17.0	6.5	36.5		17.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	5.6	23.4		19.0	5.6	23.4		19.0				
Max Q Clear Time (g_c+I1), s	3.0	5.0		11.8	2.6	8.9		5.3				
Green Ext Time (p_c), s	0.0	0.9		0.5	0.0	1.8		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	12.5											
HCM 6th LOS	B											

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	189	42	16	246	11	38	1	10	32	4	55
Future Vol, veh/h	20	189	42	16	246	11	38	1	10	32	4	55
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	8	8	5	5	5	2	2	2
Mvmt Flow	22	205	46	17	267	12	41	1	11	35	4	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	279	0	0	253	0	0	614	587	230	585	604	274
Stage 1	-	-	-	-	-	-	274	274	-	307	307	-
Stage 2	-	-	-	-	-	-	340	313	-	278	297	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.15	6.55	6.25	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.272	-	-	3.545	4.045	3.345	3.518	4.018	3.318
Pot Cap-1 Maneuver	1250	-	-	1278	-	-	400	418	802	422	412	765
Stage 1	-	-	-	-	-	-	726	678	-	703	661	-
Stage 2	-	-	-	-	-	-	669	652	-	728	668	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1250	-	-	1276	-	-	356	404	800	406	398	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	356	404	-	406	398	-
Stage 1	-	-	-	-	-	-	712	664	-	690	652	-
Stage 2	-	-	-	-	-	-	604	644	-	704	655	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.6			0.5			15.3			12.7		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	403	1250	-	-	1276	-	-	566
HCM Lane V/C Ratio	0.132	0.017	-	-	0.014	-	-	0.175
HCM Control Delay (s/veh)	15.3	7.9	-	-	7.9	-	-	12.7
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0.5	0.1	-	-	0	-	-	0.6

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	74	75	30	79	12
Future Vol, veh/h	7	74	75	30	79	12
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	11	11	5	5
Mvmt Flow	8	80	82	33	86	13
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	116	0	-	0	197	101
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	4.12	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.218	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	1473	-	-	-	785	946
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1472	-	-	-	779	944
Mov Cap-2 Maneuver	-	-	-	-	779	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	918	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.6	0		10.2		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1472	-	-	-	797	
HCM Lane V/C Ratio	0.005	-	-	-	0.124	
HCM Control Delay (s/veh)	7.5	0	-	-	10.2	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.4	

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	15	133	74	28	0	82	2	26	0	2	0
Future Vol, veh/h	1	15	133	74	28	0	82	2	26	0	2	0
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	3	3	6	6	6	50	50	50
Mvmt Flow	1	16	145	80	30	0	89	2	28	0	2	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	161	0	0	282	286	89	301	358	35
Stage 1	-	-	-	-	-	-	91	91	-	195	195	-
Stage 2	-	-	-	-	-	-	191	195	-	106	163	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.16	6.56	6.26	7.6	7	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.6	6	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.554	4.054	3.354	3.95	4.45	3.75
Pot Cap-1 Maneuver	1576	-	-	1412	-	-	662	617	958	567	499	916
Stage 1	-	-	-	-	-	-	906	812	-	708	658	-
Stage 2	-	-	-	-	-	-	802	732	-	795	681	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1568	-	-	1412	-	-	630	578	958	522	467	912
Mov Cap-2 Maneuver	-	-	-	-	-	-	630	578	-	522	467	-
Stage 1	-	-	-	-	-	-	905	811	-	704	617	-
Stage 2	-	-	-	-	-	-	753	686	-	769	680	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			5.6			11.4			12.7		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	684	1568	-	-	1412	-	-	467				
HCM Lane V/C Ratio	0.175	0.001	-	-	0.057	-	-	0.005				
HCM Control Delay (s/veh)	11.4	7.3	0	-	7.7	0	-	12.7				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q (veh)	0.6	0	-	-	0.2	-	-	0				

HCM Signalized Intersection Capacity Analysis

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	336	325	177	260	113	442	849	133	103	676	197
Future Volume (vph)	194	336	325	177	260	113	442	849	133	103	676	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.95		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3270		1752	3329		1770	3461		1752	3374	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	3270		1752	3329		1770	3461		1752	3374	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	336	325	177	260	113	442	849	133	103	676	197
RTOR Reduction (vph)	0	203	0	0	57	0	0	13	0	0	30	0
Lane Group Flow (vph)	194	458	0	177	316	0	442	969	0	103	843	0
Confl. Peds. (#/hr)	1		7	7		1	2					2
Confl. Bikes (#/hr)			2			2			1			1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	16.0		10.2	15.8		24.3	40.6		7.2	23.5	
Effective Green, g (s)	10.4	16.0		10.2	15.8		24.3	40.6		7.2	23.5	
Actuated g/C Ratio	0.12	0.18		0.11	0.18		0.27	0.45		0.08	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	206	581		198	584		477	1561		140	880	
v/s Ratio Prot	c0.11	c0.14		0.10	0.09		c0.25	0.28		0.06	c0.25	
v/s Ratio Perm												
v/c Ratio	0.94	0.79		0.89	0.54		0.93	0.62		0.74	0.96	
Uniform Delay, d1	39.5	35.4		39.4	33.8		32.0	18.8		40.5	32.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	46.2	10.4		36.0	3.6		24.0	0.8		18.1	20.6	
Delay (s)	85.7	45.8		75.4	37.4		56.0	19.6		58.6	53.4	
Level of Service	F	D		E	D		E	B		E	D	
Approach Delay (s/veh)		54.8			49.6			30.9			53.9	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			44.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			92.7%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

1: NE Andresen Road & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	336	325	177	260	113	442	849	133	103	676	197
Future Volume (veh/h)	194	336	325	177	260	113	442	849	133	103	676	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	194	336	115	177	260	64	442	849	123	103	676	168
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	207	558	187	200	592	143	447	1311	190	130	682	169
Arrive On Green	0.12	0.21	0.21	0.11	0.21	0.21	0.25	0.42	0.42	0.07	0.24	0.24
Sat Flow, veh/h	1795	2615	878	1767	2802	675	1781	3108	450	1767	2789	692
Grp Volume(v), veh/h	194	228	223	177	161	163	442	485	487	103	427	417
Grp Sat Flow(s),veh/h/ln	1795	1791	1702	1767	1763	1715	1781	1777	1782	1767	1763	1718
Q Serve(g_s), s	9.6	10.3	10.7	8.9	7.2	7.4	22.2	19.6	19.6	5.2	21.7	21.8
Cycle Q Clear(g_c), s	9.6	10.3	10.7	8.9	7.2	7.4	22.2	19.6	19.6	5.2	21.7	21.8
Prop In Lane	1.00		0.52	1.00		0.39	1.00		0.25	1.00		0.40
Lane Grp Cap(c), veh/h	207	382	363	200	372	362	447	749	752	130	431	420
V/C Ratio(X)	0.94	0.60	0.61	0.88	0.43	0.45	0.99	0.65	0.65	0.79	0.99	0.99
Avail Cap(c_a), veh/h	207	382	363	200	372	362	447	749	752	169	431	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	31.9	32.0	39.3	30.8	30.9	33.6	20.7	20.7	41.0	33.9	33.9
Incr Delay (d2), s/veh	44.5	6.7	7.6	31.9	3.4	3.7	39.3	2.0	1.9	17.1	40.9	41.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	5.0	4.9	5.5	3.3	3.3	13.9	7.8	7.8	2.8	13.7	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.0	38.6	39.6	71.2	34.2	34.6	72.9	22.6	22.6	58.1	74.9	75.8
LnGrp LOS	F	D	D	E	C	C	E	C	C	E	E	E
Approach Vol, veh/h		645			501			1414			947	
Approach Delay, s/veh		52.6			47.4			38.4			73.4	
Approach LOS		D			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	23.2	26.6	26.0	14.4	23.0	10.6	42.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	10.2	19.2	22.6	22.0	10.4	19.0	8.6	36.0				
Max Q Clear Time (g_c+I1), s	10.9	12.7	24.2	23.8	11.6	9.4	7.2	21.6				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.0	1.2	0.0	5.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			51.7									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	415	58	27	367	20	85	99	27	29	103	87
Future Volume (vph)	94	415	58	27	367	20	85	99	27	29	103	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1550	1765	1846		1770	1794		1748	1707	
Flt Permitted	0.44	1.00	1.00	0.51	1.00		0.51	1.00		0.68	1.00	
Satd. Flow (perm)	819	1881	1550	955	1846		959	1794		1244	1707	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	415	58	27	367	20	85	99	27	29	103	87
RTOR Reduction (vph)	0	0	24	0	2	0	0	20	0	0	61	0
Lane Group Flow (vph)	94	415	34	27	385	0	85	106	0	29	129	0
Confl. Peds. (#/hr)	1		6	6		1			2	2		
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	41.1	35.6	35.6	35.1	32.6		9.9	9.9		9.9	9.9	
Effective Green, g (s)	41.1	35.6	35.6	35.1	32.6		9.9	9.9		9.9	9.9	
Actuated g/C Ratio	0.69	0.59	0.59	0.59	0.54		0.17	0.17		0.17	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	649	1116	919	592	1002		158	296		205	281	
v/s Ratio Prot	c0.01	c0.22		0.00	0.21			0.06			0.08	
v/s Ratio Perm	0.09		0.02	0.02			c0.09			0.02		
v/c Ratio	0.14	0.37	0.04	0.05	0.38		0.54	0.36		0.14	0.46	
Uniform Delay, d1	3.5	6.4	5.1	5.2	7.9		23.0	22.2		21.4	22.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.0	0.1	0.0	0.2		3.5	0.7		0.3	1.2	
Delay (s)	3.6	7.3	5.2	5.3	8.2		26.5	23.0		21.7	23.8	
Level of Service	A		A	A	A		C	C		C	C	
Approach Delay (s/veh)		6.5			8.0			24.4			23.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			54.8%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: NE 72nd Avenue & NE 63rd Street

11/12/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	415	58	27	367	20	85	99	27	29	103	87
Future Volume (veh/h)	94	415	58	27	367	20	85	99	27	29	103	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	94	415	36	27	367	17	85	99	10	29	103	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	3	3	3
Cap, veh/h	685	1122	927	625	991	46	259	292	29	276	250	61
Arrive On Green	0.07	0.60	0.60	0.03	0.56	0.56	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1795	1885	1557	1781	1771	82	1257	1671	169	1271	1433	348
Grp Volume(v), veh/h	94	415	36	27	0	384	85	0	109	29	0	128
Grp Sat Flow(s), veh/h/ln	1795	1885	1557	1781	0	1853	1257	0	1839	1271	0	1781
Q Serve(g_s), s	1.2	6.9	0.6	0.4	0.0	6.9	3.9	0.0	3.1	1.2	0.0	3.8
Cycle Q Clear(g_c), s	1.2	6.9	0.6	0.4	0.0	6.9	7.7	0.0	3.1	4.3	0.0	3.8
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.09	1.00		0.20
Lane Grp Cap(c), veh/h	685	1122	927	625	0	1037	259	0	321	276	0	311
V/C Ratio(X)	0.14	0.37	0.04	0.04	0.00	0.37	0.33	0.00	0.34	0.11	0.00	0.41
Avail Cap(c_a), veh/h	734	1122	927	734	0	1037	427	0	567	446	0	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.52	0.52	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	6.3	5.0	5.3	0.0	7.3	25.5	0.0	21.7	23.6	0.0	22.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.0	0.2	0.7	0.0	0.6	0.2	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.1	0.1	0.1	0.0	2.1	1.1	0.0	1.3	0.4	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.9	6.8	5.1	5.3	0.0	7.6	26.2	0.0	22.4	23.8	0.0	22.9
LnGrp LOS	A	A	A	A		A	C		C	C		C
Approach Vol, veh/h		545			411			194				157
Approach Delay, s/veh		6.3			7.4			24.0				23.1
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	39.7		14.5	8.0	37.6		14.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	5.5	24.0		18.5	5.6	23.9		18.5				
Max Q Clear Time (g_c+I1), s	2.4	8.9		9.7	3.2	8.9		6.3				
Green Ext Time (p_c), s	0.0	2.3		0.5	0.0	1.9		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			11.3									
HCM 6th LOS			B									

HCM 6th TWSC
3: NE 81st Avenue & NE 63rd Street

11/12/2023

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	335	34	19	302	37	52	4	10	23	3	39
Future Vol, veh/h	66	335	34	19	302	37	52	4	10	23	3	39
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	4	4	4	2	2	2
Mvmt Flow	66	335	34	19	302	37	52	4	10	23	3	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	342	0	0	370	0	0	865	865	353	853	864	324
Stage 1	-	-	-	-	-	-	485	485	-	362	362	-
Stage 2	-	-	-	-	-	-	380	380	-	491	502	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.14	6.54	6.24	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.12	5.52	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.536	4.036	3.336	3.518	4.018	3.318
Pot Cap-1 Maneuver	1223	-	-	1189	-	-	272	289	686	279	292	717
Stage 1	-	-	-	-	-	-	560	548	-	657	625	-
Stage 2	-	-	-	-	-	-	638	610	-	559	542	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1220	-	-	1188	-	-	241	268	685	257	271	715
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	268	-	257	271	-
Stage 1	-	-	-	-	-	-	529	518	-	620	613	-
Stage 2	-	-	-	-	-	-	591	598	-	517	512	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.2			0.4			22.7			15.2		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	269	1220	-	-	1188	-	-	419
HCM Lane V/C Ratio	0.245	0.054	-	-	0.016	-	-	0.155
HCM Control Delay (s/veh)	22.7	8.1	-	-	8.1	-	-	15.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q (veh)	0.9	0.2	-	-	0	-	-	0.5

HCM 6th TWSC
4: NE 58th Street & NE 81st Avenue

11/12/2023

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	90	97	80	69	9
Future Vol, veh/h	9	90	97	80	69	9
Conflicting Peds, #/hr	1	0	0	1	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	10	98	105	87	75	10
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	193	0	-	0	269	152
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	119	-
Critical Hdwy	4.11	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.209	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1386	-	-	-	720	894
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1385	-	-	-	713	891
Mov Cap-2 Maneuver	-	-	-	-	713	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	905	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.7	0		10.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1385	-	-	-	730	
HCM Lane V/C Ratio	0.007	-	-	-	0.116	
HCM Control Delay (s/veh)	7.6	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.4	

HCM 6th TWSC
5: NE 82nd Avenue & NE 58th Street

11/12/2023

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	19	125	92	18	0	160	5	134	0	3	0
Future Vol, veh/h	0	19	125	92	18	0	160	5	134	0	3	0
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	1	1	1	33	33	33
Mvmt Flow	0	21	136	100	20	0	174	5	146	0	3	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	159	0	0	313	314	91	388	382	23
Stage 1	-	-	-	-	-	-	91	91	-	223	223	-
Stage 2	-	-	-	-	-	-	222	223	-	165	159	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.11	6.51	6.21	7.43	6.83	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.43	5.83	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.509	4.009	3.309	3.797	4.297	3.597
Pot Cap-1 Maneuver	1579	-	-	1408	-	-	642	603	969	519	505	971
Stage 1	-	-	-	-	-	-	919	821	-	714	665	-
Stage 2	-	-	-	-	-	-	783	721	-	769	711	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1574	-	-	1405	-	-	602	557	967	412	466	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	602	557	-	412	466	-
Stage 1	-	-	-	-	-	-	917	819	-	712	615	-
Stage 2	-	-	-	-	-	-	723	667	-	649	710	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	6.5	14	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	723	1574	-	-	1405	-	-	466
HCM Lane V/C Ratio	0.45	-	-	-	0.071	-	-	0.007
HCM Control Delay (s/veh)	14	0	-	-	7.8	0	-	12.8
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q (veh)	2.3	0	-	-	0.2	-	-	0

From: peterbracchi@aol.com
To: [Planning Commission](#)
Cc: [Cook, Nena](#)
Subject: Meeting 11/14 Citizen Forum Destruction Burnt Bridge Creek GMA Critical Area
Date: Monday, November 13, 2023 9:38:56 AM
Attachments: [Loss Recreation Area Plan Required.pdf](#)

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Please distribute to Commission board members.

Destruction Burnt Bridge Creek GMA Critical Area

Attachment: Loss Recreation Area Plan Required.pdf

Thanks Peter

From: peterbracchi@aol.com
To: [Planning Commission](#)
Subject: Meeting 11-14 Hard copy of 3 minute public Comments
Date: Tuesday, November 14, 2023 11:22:55 AM
Attachments: [image001.png](#)

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Please distribute

The City of Vancouver has multiple programs working for the Progression of Clean Water along 303d Burnt Bridge Creek.

[Burnt Bridge Creek Partnership for Clean Water](#)

TDML Alternate Restoration Plan for BBC

This Water Cleanup Plan will focus on best management practices and implementation actions to improve water quality.

[Stormwater Management Action Plan](#)

This Action Plan will help the City address pollution from urban runoff (stormwater) into our rivers and streams. Stormwater is the leading cause of water pollution in Washington.

[Water Resource Protection Program](#)

Water resource protection in the City of Vancouver is essential to the prosperity of our community. Water protection policies and ordinances are in place to protect surface waters (Burnt Bridge Creek, Columbia River and Vancouver Lake) and our drinking water resources. Most of the Land along BBC is owned by the COV and is in the GMA Critical Area.

We have years of continuous problems with the Unhoused along BBC.

What Law or Ordinance need to be created to STOP the Unhoused from Habitation in the GMA Critical areas of Burnt Bridge Creek

BPA also has High Power Transmission lines that run parallel along Western BBC

The result of habitation in Critical Areas contributed to our current Civil Emergency of Homelessness with Fire, illegal dump sites, Pollution of Water, Destruction of Trees and Shrubs.

We have lost the use of Land and Water designated for Public Recreation.

Do No Habitation Laws on Publicly Owned Critical Areas need to be going into the current update in process for Critical Areas?

Current City codes along BBC allows for Habitation in GMA Critical Areas that are Frequently Flooded

Please advise the City Manager to use his powers under the Civil Emergency and declare NO Habitation Along BBC

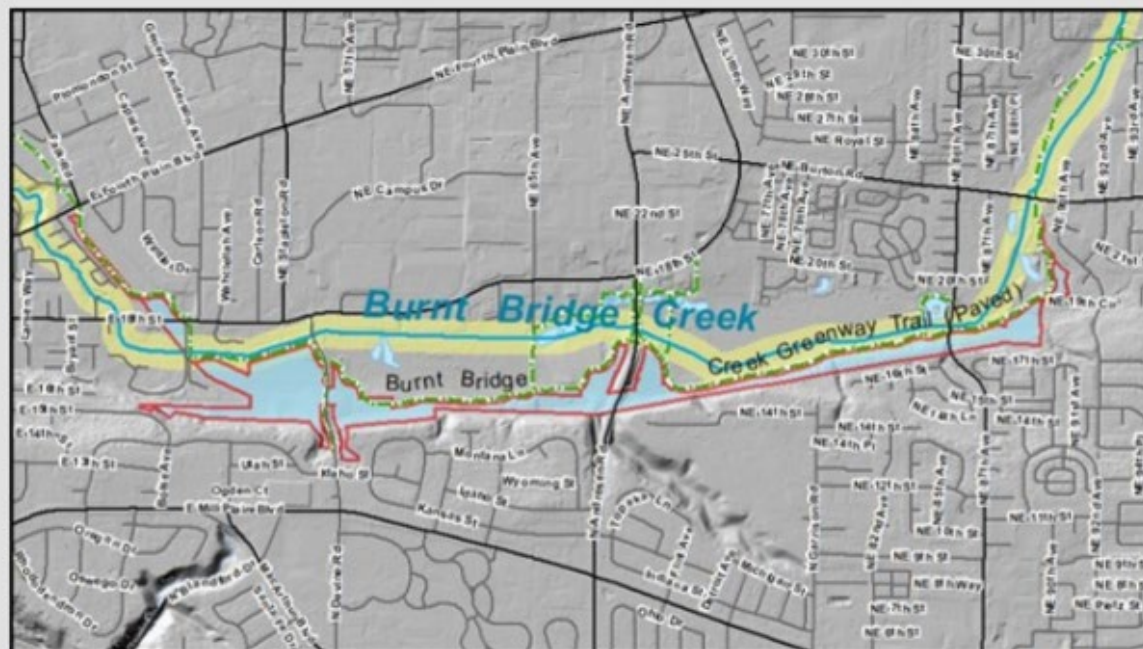
This would require Adding Protection to land of BBC that has not been protected by the Existing Code

[Unlawful camping and outside Habitation](#) 8.22.040

Here is an Example where there is Habitation is allowed in the Frequently Flooded Area

We Need to Add protection Between the Creek and Fire Zone

City laws only protect 200 feet from creek.



0 0.5 1 Miles

Fire Impact Area

Camping and Outside Habitation

**FIGURE
8.22-2**

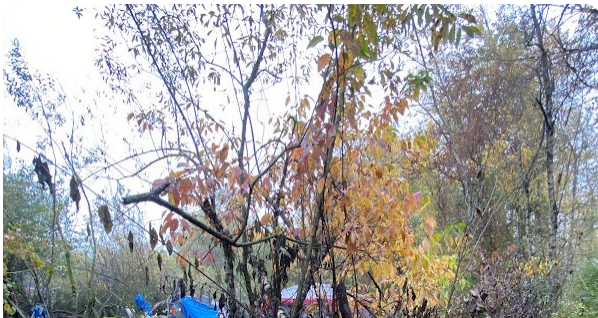


From: [PETER BRACCHI](#)
To: [Planning Commission](#)
Subject: Written submission for 11/14 meeting
Date: Tuesday, November 14, 2023 6:56:26 AM

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Here is recent example of destruction and pollution of the GMA critical care area, burnt bridge Creek in Vancouver



Oil spill Devine Rd Burnt Bridge Creek Homeless
illegal no permit developement
app.goo.gl

Thanks Peter

From: ssilvey643@aol.com
To: [Planning Commission](#)
Subject: comments for meeting
Date: Monday, November 13, 2023 9:14:37 PM

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Sirs,

In reviewing the Equity definitions and power point presentations it is with confusion as the definition is not what one finds in a dictionary. It appears that simple English evades all within this process, or that some are pushing an agenda which is still not defined and has too much wiggle room as to what someone wants things to be or not.

A simple point might be we all follow the law, and all have an equal chance, not as it appears some wish to do with putting some groups ahead of others, and putting forth an agenda making up for perceived injustices.

In one area you say to ask why, but it is only listed once.... you should ask why 5 time at least to get to root cause, and for those who don't comprehend it goes something like this, why did Jake fall down, because he tripped, why did he trip, because of the side walk crack, why did the sidewalk crack, because of the tree roots, why do the tree roots crack the side walk, because the tree should not have been planted there.

When the quality of life is affected by misguided assumptions, non science based actions, and the all out have to have it now mentality the unintended consequences may not be pleasant.

Example:

When a city department head states that it does not matter that the study is false, or that it is allowed to plant a tree 3 feet from the property line yet that tree has a 35 foot spread, thus encroaching on the neighbors space than it may be better to fix what is wrong now instead of creating issue for the future as we may well have enough now.

When the tenant is given 60 days to move out, so the owner can get monies to renovate for free and then place lower income people in the building, but the current tenant well not qualify is that fairness, or as the current buzz word equity.

Maybe the format may help, but until one can define in basic simple English, then maybe it is not defined, and the question then becomes was it intentional.

TA
Steven Silvey

Vancouver, WA